MENTAL RETARDATION ABSTRACTS

VOL. 5, NO. 3

JULY–SEPTEMBER 1968

NATIONAL CLEARINGHOUSE FOR MENTAL HEALTH INFORMATION

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
National Institute of Mental Health
Chevy Chase, Maryland 20203

MENTAL RETARDATION ABSTRACTS is a publication of the National Clearinghouse for Mental Health Information, National Institute of Mental Health. It is a specialized information service designed to assist the Institute in meeting its obligation to foster and support laboratory and clinical research into the nature and causes of mental disorders and methods of treatment and prevention. Specifically, this service is intended to meet the needs of investigators and other workers in the field of mental retardation for rapid and comprehensive information about new developments and research results, and to foster maximum effective utilization of these results. Mental Retardation Abstracts is prepared under contract with the American Association on Mental Deficiency. It is available gratis to professional workers actively engaged in the field of mental retardation; other interested persons may purchase copies from the Government Printing Office. Professional workers who wish to receive the abstracts should write to the Clearinghouse describing their professional activities in this field. Requests to receive the publication, address changes, and other communications concerning the abstracts (except orders to the Superintendent of Documents) should be addressed to:

Mental Retardation Abstracts
National Clearinghouse for Mental
Health Information
National Institute of Mental Health
5454 Wisconsin Avenue
Chevy Chase, Maryland 20203

Use of funds for printing this publication approved by the
Director of the Bureau of the Budget, April 29, 1968.

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. Subscription price per year in the United States, Canada, and Mexico, $3.00; other countries, $3.75. Single copy, $1.00. The Clearinghouse does not sell copies of Mental Retardation Abstracts. Persons wishing to purchase single copies or subscriptions should send their orders directly to the Superintendent of Documents accompanied by check or money order.

MENTAL RETARDATION ABSTRACTS

Volume 5, Number 3 July - September 1968

TABLE OF CONTENTS

TABLE OF CONTENTS

BROAD ASPECTS OF MENTAL RETARDATION

1026 Welfare Administration. *Children of Deprivation: Changing the Course of Familial Retardation.* Kugel, Robert B., & Parsons, Mabel H. (Children's Bureau Publication Number 440-1967.) Washington, D. C., Superintendent of Documents, U. S. Government Printing Office, 1967, 86 p. $0.35.

Improvement in Stanford-Binet (S-B) IQ scores ranging in increments from 2 to 51 points was found in 32 out of 35 familial MR children who participated in a project aimed at providing an intensive school program of environmental enrichment. Additional project goals were to gather extensive information about the familial MR children; to discover the medical, psychological, social, and educational backgrounds of their 16 families; and to enrich home environments by working with the families, particularly the mothers, in order to improve housing, health, nutrition, employment, and educational situations. Criteria for project participation were: entrance CA between 3 and 6 years; S-B IQ between 50 and 84; lower socioeconomic class; one or both parents MR (Binet or Wechsler IQ below 84); at least one other MR sibling (S-B IQ below 84); and lack of gross neurological basis for MR. Incidence of pregnancy disorders, perinatal difficulties, and prenatal disorders was high and EEG results indicated that over 60 percent of the children had some degree of encephalopathy. Investigation of the social and psychological factors affecting these families led to the postulation that although familial MR can be produced by either biological factors or by psychosocial factors, it is most commonly the result of both these factors. Important contributions to changes in the homes were made by the social worker, public health nurse, and home economist. Mothers had failed to develop adequate homemaking techniques because of inadequate school home-economics programs and unsatisfactory mothers of their own. They were very receptive to home economics information when it was aimed at their particular needs and geared to their level. (81 refs.) - *J. K. Wyatt.*

CONTENTS: Familial Mental Retardation: What Is It; The Project; Study Findings and Results; Discussion of Findings.

1027 JASLOW, ROBERT I. *A Modern Plan for Modern Services to the Mentally Retarded.* Washington, D. C., U. S. Government Printing Office, Superintendent of Documents, 1967, 12 p. $0.10.

A plan for a community service program for the MR is described in terms of a 6-point model which embodies flexibility and economy. It is designed to provide the proper balance and coordination of community services. The program includes: (1) opening every generic community agency to the retarded insofar as these agencies' competence and ability permit; (2) providing basic training in MR for every health worker; (3) defining the various agencies' roles and developing criteria for the utilization of the agencies' specialized services and facilities; (4) placing an MR specialist, either full-time or part-time, in every generic agency; (5) developing standards for services and training; and (6) instituting a community coordinating mechanism to insure balanced services and to aid program planning for the MR. (No refs.) - *A. Huffer.*

1028 JERVIS, GEORGE A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, 248 p. $9.75.

The major data presented in the 1963 Kennedy Symposium on MR emphasize the role of chromosomal and biochemical abnormalities in the etiology of MR and the effects of psycholinguistic and conditioning procedures on the behavior of MRs. Additional medical papers present clinical and epidemiological information on MR, the findings of a study on cytomegaloviruses, and neuropsychological data. Physicians, biologists, geneticists, biochemists, psychologists, and all those who work with the MR should find this book of interest. (292 refs.) - *J. K. Wyatt.*

CONTENTS: Studies of Mosaicism in Down's Anomaly (Penrose); Studies of the Genetics of Mongolism (Soltan, Sergovich, & Barr); Chromosome Abnormalities in Spontaneous Abortuses (Carr); Mental and Physical Deficiency Related to a Partial Deletion of the Short Arm of Chromosome 5 (Lejeune); Homocystinuria (Waisman & Gerritsen); Diagnosis and Treatment of Maple Syrup Urine Disease (Moser, Young, & Efron); Metachromatic Leucodystrophy and Sulfatide Metabolism (McKhann, Moser, & Moser); The Conversion of Phenylalanine to Tyrosine and Its Relation to Phenylketonuria (Kaufman); Hereditary Partial Agenesis of the Corpus Callosum: Biochemical and Pathological Studies (Menkes, Philippart, & Clark); On Clinical and Epidemiological Aspects of Mental Retardation (Dekaban); Current Information Concerning Cytomegalic Inclusion Disease and Cytomegaloviruses (Medearis); Some Neuropsychological Studies Relevant to Mental Retardation (Rosvold); Amelioration of Mental Disabilities Through Psychodiagnostic and Remedial Procedures (Kirk); Two Applications of Behavioral Research to Mental Retardation (Ross).

1029 TAYLOR, WALLACE W., & TAYLOR, ISABELLE W. *Services for Handicapped Youth in England and Wales.* New York, New York, International Society for Rehabilitation of the Disabled, 1966, 340 p.

The Ministries of Education of England and Wales recognize and provide services for 10 categories of handicapped pupils: blind, partially sighted, deaf, partially deaf, epileptic, physically handicapped, speech defective, delicate, educationally subnormal, and maladjusted. Services for handicapped youth (aged 14-21 years) are components of those available to the general population and include: education; vocational assessment, guidance, and placement; vocational training and employment; medical services; and welfare services. Employment for school leavers is found through the Youth Employment Service. Vocational training is provided by government centers, volunteer centers, industry, and correspondence courses. Special vocational training centers are maintained for MRs over age 16. Sheltered employment opportunities are provided by Remploy - sponsored by the Ministry of Labor, voluntary associations, and local authorities. Junior training centers (ages 5-16) and adult training centers are available for less severely handicapped TMRs. Severely handicapped TMRs are cared for in psychiatric hospitals. Present medical provisions do not provide for continuous medical care for handicapped adolescents. This book is intended to provide perspective and illumination for students and professionals interested in studying the service arrangements available for the handicapped youth of England and Wales. (404-item bibliog.) - *J. K. Wyatt.*

CONTENTS: Introduction; Educational Services; Vocational Assessment, Guidance, and Placement Services; Vocational Training; Employment Services; Medical Services; Welfare Services; Summation.

1030 BANK-MIKKELSEN, N. E. Social provision for the mentally handicapped. In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France. March 21-26, 1966.) Brussels, Belgium, 1966, p. 96-105.

MRs have a basic right to receive the most adequate treatment, training, and rehabilitation available and to be approached in an ethical manner. The MRs' positive attitudes and their potentials for functional living are important and must not be underestimated. Positive discrimination, which is a result of over protection, can be harmful to the MR because it allows weakness to overcome possibilities for development. The placement of the MR in large institutions is unacceptable in spite of the good care that may be available there. Twenty-four hour care for short

diagnostic periods or for longer training sessions should be only one of a variety of services available to the MR. If possible, the MR child should live at home. The basic goal is to provide the retardate with a life as normal as possible. Social provisions should strive for: public education, medical consultation, assistance for home care, treatment and training, parental relief, preschool and other educational facilities, and institutions with a variety of purposes and modern treatment capacities. Institutions should be restricted in size and should have a home-like appearance. Care entails a multidisciplinary approach and cooperation between parents and service is required. (No refs.) - *B. Bradley.*

1031 Place of the mentally retarded. *British Medical Journal*, 3(5565):567-568, 1967.

An IQ of 70 has been internationally accepted as the lower boundary for normal intelligence. Consequently, as much as 1.5 percent of a population may be subnormal. Most of these MR Ss function as an integral part of society. The percent of severely retarded Ss in England is regressing, but the number of hospitalized MR Ss is rapidly increasing. An organized, energetic psychiatric team functioning as a rehabilitative unit could rapidly produce a considerable reduction in this number. This program should be supervised by the education authority with qualified, specially trained teachers, rather than by the local health authority. Research regarding etiology and rehabilitation could do much to alleviate the problem. (10 refs.) - *W. A. Hammill.*

1032 MacKEITH, RONALD. The care of the mentally subnormal. *Proceedings of the Royal Society of Medicine* (symposium), 60(11,II):1225-1226; discussion, 1227, 1967.

Since patients diagnosed as having subnormal intelligence can lead productive, useful lives, training programs should be instituted to encourage this development. Surveys in the past few years have shown that a large proportion of people labeled as subnormal and thought to require continual custodial care are capable of productive work and can meet their own personal needs once they have received proper training. In spite of this, many misconceptions about MR exist among medical personnel, possibly because of the lack of information on MR in their training and their initial contacts with MR which are often traumatic. At the present time, a review of available facilities for MR patients is needed, and more funds should be made available for the establishment and staffing of research, treatment, and educational facilities. Furthermore, physicians should be better educated in the prevention of MR. Except for mental illness or psychopathy, admission to psychiatric facilities is not generally needed, and intellectual deficit alone should not be a sufficient reason for hospitalization of MR patients unless they are totally handicapped. (1 ref.) - *E. Gaer.*

Guy's Hospital
London, England

1033 DYBWAD, ROSEMARY F. Public acceptance of the mentally retarded. In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966) Brussels, Belgium, 1966, p. 117-127.

The problems involved in public awareness of the MR are traced historically with present emphasis accorded community understanding and acceptance. Previously, the primary goal of public information efforts by parents was to educate the public concerning MR. At present, the emphasis is placed upon gaining public acceptance in the school playground and other community activities. The type of appeal to the public has changed from a plea for pity to a demand for a fair share of their rights from society. In order to obtain public support, parents must convince the community that the retardate has a potential role and can make a contribution to society. This campaign should involve all mass communication media, education training, and demonstrations of the achievements of the retardates themselves. These include: television, newspapers, movies, publications, open houses, and national events such as a national day or week. Private and public organizations in health welfare and rehabilitation services must join parent associations in increasing public acceptance of the MR. The information campaign must avoid exaggerated claims, deal effectively with objections from special interest groups, and align with other handicapping conditions at appropriate times. (No refs.) - *B. Bradley.*

1034 KUBIE, LAWRENCE S. The overall manpower problem in mental health personnel. *Journal of Nervous and Mental Disease*, 144(6):466-470, 1967.

The current problems and future prospects of manpower resources in the field of mental health are discussed. There is currently a shortage of manpower in every phase of the mental health field. Furthermore, the population explosion threatens to make the problem worse. Sources of manpower are limited by the fact that 90 percent of the population never enter the professional manpower pool. Even many of the intellectually elite drop out (about 2/3). A marked increase of medical school graduates will be necessary to meet future demands. Since about 10 percent of physicians become psychiatrists, the growth rate will continue to be too slow. Although there are a sufficient number of approved residencies, it is difficult to recruit quality personnel when there are other highly-rewarded medical specialties competing with psychiatry. The manpower situation is similar for clinical psychologists and psychiatric social workers. The number of psychologists has increased at twice the rate of psychiatrists, but a shortage still exists. The problem for psychiatric social workers has been the inability of schools to accommodate the high number of applications. One assured source of manpower for the future will be the increasing number of available older people. With 2 years of training and the advantages of having lived through marriage and child-raising, these individuals can become effective psychological counselors. (19 refs.) - *R. Froelich.*

Wheeler Lane
Route #1, Box 91-1
Sparks, Maryland 21152

1035 GARDNER, JAMES M. Lightner Witmer - A neglected pioneer. *American Journal of Mental Deficiency*, 72(5):719-720, 1968.

Lightner Witmer was born 100 years ago. His name is probably unfamiliar to many persons working in MR, however, he was a leading pioneer in the field. Witmer organized the first psychological clinic in this country to treat the retarded, established the first university course in the area, and founded one of the early journals. He was associated with such men as Walter E. Fernald and Lewis Terman. Witmer stressed the necessity for finer diagnostic approaches, the wide variation within MR, the need to distinguish between retardation and psychosis, and the effects of environmental and emotional deprivation. (12 refs.) - *Journal abstract.*

University of Maine
Orono, Maine 04473

1036 ROSSI, ALBERT O. Educationally handicapped child. *New York State Journal of Medicine*, 67(21):2823-2827, 1967.

Many children educationally handicapped by a psychoneurologic impairment can be helped with proper programing. The program may include: (1) administering appropriate medication (such as methylphenidate hydrochloride and amitriptyline hydrochloride) to assist in his control, promote more effective learning, and facilitate social success; (2) controlling attention through a structured environment which eliminates distractions and establishes definite procedures; (3) building competence through tasks adjusted to the child's ability and interest and designed to relate new knowledge to old; (4) attacking deficiencies by individualized learning, recreation and therapy; and (5) developing scholastic skills by emphasizing learning tasks designed to overcome or compensate for perceptual difficulties. The signals which should alert teachers to neurologic impairment are: (1) disordered behavior, (2) emotional lability, (3) short attention span, (4) defective work habits, (5) impulsiveness and meddlesomeness, (6) social incompetence, and (7) specific learning disorders. These signs can be remembered by the acronym "DESDISS". (10 refs.) - *E. F. MacGregor.*

P. O. Box 1453
Middletown, New York 10940

1037 BAX, MARTIN. Medical aspects of the care of handicapped adolescents. *Developmental Medicine and Child Neurology*, 9 (6):776-779, 1967.

The medical aspects of the care of handicapped adolescents is discussed in terms of the current medical-service situation for adolescents and the medical problems that exist for handicapped adolescents, particularly the specific problem of brain injury. There is a

gap in medical services for adolescents, handicapped or otherwise; they are too old for pediatric care and often have different problems from adults. Many handicapped adolescents using vocational services come from regular schools and have not had the advantage of medical services which specialize in such problems as bizarre behavior, minor forms of epilepsy, hyperkinesis and physical deterioration of the cerebral palsied. Adolescents attending a special school may have been under the care of the same medical team for 10-12 years. In these cases, a fresh appraisal may be useful. Since the growth spurt in adolescence may cause the deterioration that occurs in the cerebral palsied, a more active regimen of physiotherapy or surgical intervention may be helpful. The handicapped adolescent, particularly the brain-injured adolescent, is likely to require psychiatric help. Since learning disorders of the brain damaged may be revealed in different ways in different situations, the physician and psychologist may need to confer. Appropriate supervision of the handicapped is also needed to avoid their serious physical deterioration. In order to enhance the handicapped adolescent's chances of obtaining full employment, there is a need for the integration of medical and vocational practices. (7 refs.) - *R. Froelich.*

Institute of Education
London University
London, England

1038 SHELLHAAS, MAX D. The development of an audio-visual instrument for survey research. *Project News of the Parsons State Hospital and Training Center*, 3(7):1-5, 1967.

An audio-visual film on behavioral situations has been developed for use in a community survey to determine differential emphasis placed on behavioral norms in different types of environments. This type of presentation has many advantages: it is much more precise than written material, it may be presented to people with varied cultural and educational backgrounds, it evokes more responses from the persons interviewed, and it secures ratings which lend themselves to several different forms of statistical analysis. The application of this technique to other areas of behavioral sciences appears unlimited. (6 refs.) - *E. F. MacGregor.*

Parsons State Hospital and
Training School
Parsons, Kansas 67357

1039 PAYNE, DAN. Regional cooperation in mental retardation research. In: Western Interstate Commission for Higher Education. *Western Conference on the Uses of Mental Health Data*, (Proceedings of the first annual meeting, Las Vegas, Nevada, June 27-30, 1966,) Boulder, Colorado, 1967, p. 69-71.

The Joint Data Collection Project in Mental Retardation is conducted in the Western Interstate Commission for Higher Education region and is one of the most comprehensive institutional data collection programs in operation. Data analysis from 20 institutions provides information on 25,000 to 28,000 patients. Each institution receives a frequency distribution of the characteristics of its total population. Specific kinds of additional information are available on request. Some institutions have used this data for budget justification, programs requests, planning, program evaluation, development of new programs, and research. Plans are underway to increase the usefulness of the data and to utilize it to stimulate research. (No refs.) - *J. K. Wyatt.*

1040 LEJEUNE, JEROME. Avenir et recherche. (Research and the future.) In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966,) Brussels, Belgium, 1966, p. 155-161.

For the purposes of defining future research prospects in the field of MR, the disorders resulting in mental deficiency are divided into 2 main categories. The first category includes all affections which involve a definitive deficiency or destruction of certain cerebral structures. The second group includes disorders of various etiology presenting the same characteristics; although the physiological substratum of intelligence remains intact, the functioning is impaired. An example is given of the effect of the lack of a single biochemical reaction on the total organism. In some cases, early detection can insure total recovery. However, defects in chromosomal mechanisms involve more complex problems. It is hoped that increased knowledge of these disorders will allow a decrease of their effects. Data indicates the need for research in this area, since 1 of every 10 cases of profound MR is caused by trisomy 21 and probably 1 out of 5 cases is due to some other variety of chromosomal aberration. (No refs.) - *B. Bradley.*

1041 GÜNZBURG, ANN L. Architecture and mental subnormality. *Journal of Mental Subnormality*, 13(25):84-87, 1967.

An analysis of new architectural plans for institutions, training centers, and other facilities for MRs indicates that basically they do not differ from those of older institutions - that their design provides protection and custodial care but is not conducive to rehabilitation. Architectural planning can help to create a therapeutic physical environment (1) by providing for the creation of a home atmosphere which will aid in the development of security, physical comfort, and a personal relationship to surroundings; and (2) by analyzing the daily life of the institution in order to identify routine services and activities which can be used to develop increased social competence. (No refs.) - *J. K. Wyatt.*

Tanworth-in-Arden
Warwickshire, England

1042 FOXHALL, WILLIAM B. Mental health facilities. *Architectural Record*, 141(2):147-162, 1967.

Architecture is actively involved in the implementation of a new philosophy of care in the field of mental health. A more human scale of building, a community-oriented facility, warmth and beauty of surroundings, specific patient needs, building uses, flexibility, and long range program planning are some of the major aspects to be considered. Plans for residential centers for the MR and community mental health centers are given. (No refs.) - *E. F. MacGregor.*

1043 Hexagonal cottages create human scale in state-supported school for mentally retarded. *Architectural Record*, 141(2):150-151, 1967.

Woodbridge State School consists of 19 single-story residential cottages around a 2-story hospital and a multi-purpose building. The hexagonal motif ties the complex together. The cottages are divided into 6 triangular segments with the interior core containing washrooms, toilets, and a supervisory area. Ambulatory and non-ambulatory patients are housed in separate areas. Exterior and interior views and floor plans are shown. (No refs.) - *E. F. MacGregor.*

1044 Dynamic master plan keeps retardation center ahead of its time, a model of planned growth. *Architectural Record*, 141 (2):152-153, 1967.

A comprehensive architectural approach has helped to integrate mental health facilities at the Oregon Fairview Home for the retarded. Projection of the birth, death, and discharge rates of the population makes possible reasonably accurate plans for future growth and construction. Exterior and interior views and floor and grounds plans are given. (No refs.) - *E. F. MacGregor.*

1045 Two facilities for children by one architectural firm show the effects of program and diagnosis on design. *Architectural Record*, 141(2):154-155, 1967.

The architectural differences of Wallace Village, a private institution with a home-like atmosphere for brain-damaged children (6-16 years), and the Rene Spitz Children's Division of the Fort Logal (Colorado) Mental Health Center, a state institution with a more hospital-like approach for emotionally disturbed children, demonstate how architectural planning reflects patient needs and administration policies. Exterior and interior views and floor and grounds plans are given. (No refs.) - *E. F. MacGregor.*

1046 U. S. HEALTH, EDUCATION, AND WELFARE DEPARTMENT. *Programs for the Handicapped: Mental Retardation Grants - Part I Construction, Training and Other Grants.* Washington, D. C., Superintendent of Documents, U. S. Government Printing Office, 1967, 65 p., $0.40.

Over 1,000 grants to states by 7 agencies of the U. S. Department of Health, Education, and Welfare for construction and training in the field of MR are listed by state, city, title, date, amount, and agency. Three formula grant programs (Crippled Children's Program, Maternal and Child Health Program, and Vocational Rehabilitation State Grant Program) are listed in the appendices in terms of the total amount of funds available to the states. (No refs.) - *J. Snodgrass.*

1047 NATIONAL INSTITUTE OF MENTAL HEALTH. *1966 Final Reports - State Mental Health Planning.* (Public Health Service Publication No. 1685.) Washington, D. C., Superintendent of Documents, U. S. Government Printing Office, 1966, 208 p. (Price Unknown).

As part of the continuous reporting concerning federal grant in aid to support state comprehensive, long-range, interagency mental-health planning, this report contains brief summaries of each state's final report regarding the organization for planning, the major findings and recommendations, the impact of the program, and the plans for continuing the work. The most frequent recommendations called for improved interagency coordination, better data collection and interpretation, development of mental-health centers, and better financing. (No refs.) - *J. Snodgrass.*

1048 Secretary's Committee on Mental Retardation. *Mental Retardation Publications of the Department of Health, Education, and Welfare.* Washington, D. C. , U. S. Department of Health, Education, and Welfare, January, 1968, 58 p.

Publications of the U. S. Department of Health, Education, and Welfare which are concerned with MR are listed in annotated form. The references are arranged in broad categories including: legislation and federal programs; specific handicapping conditions; institutions and home care; detection, diagnosis, and treatment; rehabilitation, education, and employment; family; and films. Subject and author indices are also included. The listing is a revision of previous bibliographies. (201 refs.) - *A. Huffer.*

1049 DEKABAN, ANATOLE. On clinical and epidemiological aspects of mental retardation. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 10, p. 147-154.

Although there is no official agreement concerning a definition of MR, a 3-fold classification system is generally used to indicate degree, and most acceptable definitions either are based on modifications of the British Mental Deficiency Act or place an emphasis on social competence. Generalizations concerning incidence and prevalence of MR cannot be made because statistics on large populations are based on incomplete data and most studies employ different criteria which cannot be compared. Comparison of incidence of institutionalized MRs between countries cannot be accurately carried out because of differences in classification, the availability of beds, and society tolerance of uninstitutionalized MRs. An analysis of the types of cerebral lesions present in 32 consecutive autopsies performed in an institution for the MR revealed: 5 malformations, 15 chronic lesions (anoxic, ischemic, or hemorrhagic), 3 inflammatory infection lesions, 1 degenerative lesion, 4 other types of lesions, and 4 with no structural brain lesions. An analysis of the composition of 1,127 MR patients in a resident institution revealed that 389 had serious motor handicaps and required constant attention. Over 1/2 the members of this group gave evidence of the presence of a gross cerebral lesion. (6 refs.) - *J. K. Wyatt.*

MEDICINE AND ALLIED SCIENCES

Diagnosis (General)

1050 MILANI-COMPARETTI, A., & GIDONI, E. A. Routine developmental examination in normal and retarded children. *Developmental Medicine & Child Neurology*, 9(5):631-638, 1967.

A neurodevelopmental examination and recording chart (representing 5 year's work) was developed for screening normal and MR children. The examination is based on the antigravity control of the body axis because items of this parameter are interrelated to functional motor achievement and the underlying reflexes. The reactions studies include righting (head, sagittal trunk, and derotative), parachute (sudden displacement of an erect trunk), tilting, and primitive.

The developmental chart allows for easy recording and rapid screening of young infants in terms of spontaneous behavior and evoked responses. (9 refs.) - *C. A. Pepper.*

Centro A. Torrigiani
C. R. I. Via di Camerata 8
Firenze, Italy

1051 MacKEITH, RONALD. The role of a developmental paediatrics centre. *Medical and Biological Illustration*, 17(4):230-232, 1967.

The philosophy of approaching the complex problems of handicapped children at a center for developmental pediatrics in London, England, includes early recognition, comprehensive assessment, immediate treatment, family support, and periodic reassessment. Early recognition is necessary and depends on developmental screening of "at risk" infants at intervals between infancy and school age. Those children recognized as handicapped should be sent to a center that specializes in evaluation and immediate treatment. Comprehensive assessment is the only basis for optimum management of the handicapped child and his family. The family's reaction to having a handicapped child is complex and often intense. Involved in this reaction are ambivalence, feelings of inadequacy, guilt and shame, confusion and bewilderment, and embarrassment. Public opinion about handicapped children is changing, but parents still need full explanations about their child's problem. Crisis periods when the parents are more receptive to help from an experienced person include: the time when the presence of a handicap is suspected, the time when a decision to send the child to an ordinary or special school must be made, the time when the decision to send the child to a residential school or into long term care must be faced, and the time when suitable employment must be found. A receptive, relaxed atmosphere and the provision of time for parents to talk are the essence of a profitable, helpful interview. The facilities for continued treatment of the handicapped child are extremely important. (1 ref.) - *R. Froelich.*

Newcomen Clinic
Guy's Hospital
London, S. E. 1,England

1052 ELAM, H. P. A panoramic view of the children's neurology service in Ibadan, Nigeria. *Developmental Medicine and Child Neurology*, 9(6):784-790, 1967.

Experience at the Children's Neurology Clinic, University Teaching Hospital, Ibadan, Nigeria, over a 2-year period (1963-65) involving 3,384 children is described. Four hundred and twelve of these were new patients and there was an average of 33 visits per week. Of the 249 children with MR, 198 were diagnosed as having an organic origin. Since no standardized intelligence or projective tests have been developed for the Yoruba culture, a combination of clinical observations and mother's description was used to make the diagnosis of MR. It appeared that MR children had a particularly difficult time adjusting to their social role and patterns. This is contradictory to the usually held belief that MR is better tolerated in primitive cultures. There were 195 children with congenital cerebral palsy (CP) and 170 cases of acquired CP. Some causes of acquired CP were kwashiorkor, malignant malaria, nicotine poisoning, small pox, and most commonly, purulent meningitis. There were 160 cases of poliomyelitis, usually of the paralytic type, referred to the clinic. Additional diagnoses included: 31 infants with neonatal tetanus who were in the post-hospital phase of the disease, 8 cases of classical muscular dystrophy, and 15 cases of nutritional dystrophy who showed electroencephalographic changes and showed either apathetic behavior or hyperactivity. (14 refs.) - *R. Froelich.*

Children's and Adolescent
Program
4200 North Oak Park Avenue
Chicago, Illinois 60634

1053 BLACKHURST, ROBERT T., & RADKE, EDMUND. Testing retarded children for defects in vision. *Digest of the Mentally Retarded*, 4(1):63-64, 1967.

The incidence and prevalence of visual defects in MR children is discussed in terms of diagnostic procedures. It is estimated that about 250,000 MR children of school age in the United States have uncorrected defects in vision. This estimate is based on a program in which 6,158 MR children were tested for visual defects. The tests used were a 20/30

Snellen Test, a 1.75 plus sphere lens test (a test for farsightedness), and a phoria test (a test for eye muscle balance). Children under 6 years of age were given only the Snellen test. A total of 1,313 children (21 percent) were referred to specialists. According to about 300 reports received from the eye specialists, over 90 percent of those examined had significant uncorrected visual defects. EMR children can use regular diagnostic procedures with little or no modification needed, however, SMR children require modification of the procedure. More formal methods may include the corneal reflection test, a procedure which is well suited to children who are either too young or too immature to cooperate in more elaborate testing. The Michigan Junior Vision Screener, an instrument developed for preschool children, was used to test visual acuity. It uses a Snellen E, which is given as a 3-legged table; a game is played whereby the child tells which way the legs are pointing. This procedure works well with both normal, preschool, and older MR children. For children who lack speech, a wooden E can be used which they can manipulate and turn in the same direction as the E in the instrument. (11 refs.) - *B. Bradley.*

Michigan State Department
of Public Health
Lansing, Michigan

1054 WHITEHEAD, R. G. Biochemical tests for assessing subclinical nutritional deficiency. *Clinical Pediatrics*, 6(9):516-518, 1967.

Chronic subclinical malnutrition causes growth retardation, reduces resistance to infection, and may adversely affect brain development. The severe forms of malnutrition are easily recognized, but a biochemical test to detect the marginal or subclinical forms would be useful. Such a test should use readily available materials, assay a stable substance to allow delay in measurement, be easily done by semi-skilled personnel, and not be affected by the age of the S or recent food intake. Serum albumin determination is too insensitive, often not changing until after clinical signs appear. The amino acid ratio (branched chain amino acid/essential amino acid) is useful for protein deficiency. The ratio of urinary urea to creatinine reflects dietary intake, not metabolic status. The ratio of urine hydroxy-proline to creatinine reflects both protein and caloric malnutrition. All these tests are influenced by intercurrent infections and parasites, both of which are common in undernourished children, but when properly used the tests can provide objective criteria of a S's nutritional state. (19 refs.) - *W. A. Hammill.*

University of Cambridge
Cambridge, England

1055 ALLEN, S. THOMAS, DUBNER, MARTIN S., & MOCKLER, NEDD D. Routine prenatal screening for atypical antibodies. *American Journal of Obstetrics and Gynecology*, 99(2): 274-279, 1967.

Of 1,810 prenatal women screened for atypical antibodies, 41 were sensitized, and 19 ultimately gave birth to infants with erythroblastosis fetalis. Examinations included ABO typing, Rh phenotyping, hemoglobin, hematocrit, Hemantigen, and Coombs tests. Antibody identification and titration were done whenever indicated by positive findings on screening. Eighty-four percent of the total group were Rh_o positive. Of the sensitized cases, 16 occurred among the 1,520 Rh-positive patients and 25 occurred among the 290 Rh-negative patients. All but 1 were multiparas, and 13 had received prior blood transfusions. Although anti-Rh_o (D) was the most common antibody involved, 25 patients had additional atypical antibodies. These 25 patients would not have been detected by the "classical" procedures still being used routinely in some hospitals for detection of isoimmunization. Of the Rh-positive patients with atypical antibodies, 10 gave birth to normal infants. Of the Rh-negative patients with atypical antibodies, 9 gave birth to normal infants. One case with atypical antibodies had been previously blood typed incorrectly. Antibody screening for all prenatal patients is emphasized. (7 refs.) - *R. Froelich.*

15955 Samaritan Drive
San Jose, California 95124

1056 WALKER, ADRIAN, PHILLIPS, LYN, POWE, LEN, & WOOD, CARL. A new instrument for the measurement of tissue pO_2 of human scalp. *American Journal of Obstetrics and Gynecology*, 100(1):63-71, 1968.

When a new instrument for the measurement of tissue pO_2 of human scalp was used on 5 fetuses, it was able to elucidate fetal oxygenation in relation to certain events, but

at present it has no use in clinical obstetrics. Fetal oxygenation was monitored continuously by means of a membrane-covered, flush-type oxygen electrode that measured qualitative changes in tissue pO_2. The flush-type electrode was selected over the recessed type or the combined type electrode. One mother breathed a 50:50 nitrous oxide-oxygen mixture for 5 minutes during labor. The fetal scalp pO_2 increased within 1 minute of the mother's breathing this mixture. Another infant showed a markedly increased pO_2 after delivery. When the neonate breathed 100 percent oxygen, the neonatal scalp pO_2 immediately increased. One infant with an Apgar score of 2 continued to have the same scalp tissue pO_2 after birth as he had had before birth. When artificial ventilation of the lungs was carried out with 100 percent oxygen, the pO_2 rose immediately. Two fetuses showed a decreased scalp tissue pO_2 in association with decreased heart rate which occurred during contractions. General anesthesia of 1 mother resulted in a gradual fall in pO_2 which continued until delivery. (9 refs.) - *R. Froelich.*

Monash University Medical School
Queen Victoria Memorial Hospital
Melbourne, Victoria, Australia

1057 FOX, STEPHEN S., & NORMAN, ROBERT J. Functional congruence: An index of neural homogeneity and a new measure of brain activity. *Science*, 159(3820):1257-1259, 1968.

Extremely high correlation between the probability that a single cell will fire and the amplitude of microelectrode electroencephalogram was established in on-line, real-time computer experiments. Such congruence between spike and wave shows orderly biological variation under sensory control. Congruence, as a measure of brain activity, provides an immediate estimate of regional neural homogeneity of function of cell populations in brain. (21 refs.) - *Journal abstract.*

Iowa University
Iowa City, Iowa 52240

1058 Brain biopsy can guide parents. *Medical World News*, 8(47):48, 1967.

Although many surgeons believe brain biopsy is unwarranted except in cases of suspected tumor, others feel that it is of value for research and for clarification of diagnosis in cases of rapidly progressive brain damage. By means of this technique, Tay-Sachs disease, amaurotic familial idiocy, and neuro-visceral lipidosis have been discovered in some families, and the parents have been given genetic counseling accordingly. Furthermore, it provides a research tool to gain understanding of obscure cerebral diseases. (No refs.) - *E. Gaer.*

1059 CHURCHILL, JOHN A., & RODIN, ERNST A. Asymmetry of alpha activity in children. *Developmental Medicine and Child Neurology*, 10(1):77-81, 1968.

An association between asymmetry of alpha activity in children's EEG and the occipital position of their heads at birth was found. The majority of children from left occipital positions had higher amplitude alpha activity from left hemisphere leads suggesting relative depression of right hemisphere activity. Conversely, alpha amplitudes were higher over the right hemisphere in the majority of children with right occipital births. The findings suggest that one hemisphere may be injured more than the other at birth, the one at greater risk being determined by the head position. (6 refs.) - *Journal summary.*

National Institutes of Health
Bethesda, Maryland 20014

1060 KAYNE, JERRY. Value of stool survey. *American Journal of Mental Deficiency*, 72(4):634-636, 1968.

This study was undertaken to determine the high incidence rate of amebiasis in the long-term institutionalized adult retardate, the important value of the provocative enema to obtain positive results in the non-symptomatic case of amebiasis, and the necessity of this type of testing before a patient is placed in the community. Observation further reveals the importance of alternating the courses of therapy in obtaining the best negative results. (2 refs.) - *Journal abstract.*

Patton State Hospital
Patton, California 92369

1061 ALADJEM, SILVIO. Morphologic aspects of the placenta in gestational diabetes seen by phase-contrast microscopy. *American Journal of Obstetrics and Gynecology*, 90(3):341-349, 1967.

Comparison of the placentas from 54 patients with gestational diabetes and 65 patients with uncomplicated pregnancies showed no gross pathological differences; however, on phase-contrast microscopy the diabetes group did show nonspecific pathology that was associated with poor fetal outcome. None of the control placentas revealed microscopic alterations, but 42 percent of the diabetic placentas had pathology. The pathology included detachment, rupture, or disappearance of the syncytium (4), subsyncytial edema (4); hyperplasia of syncytial sprouts (2); stromal pathology (4); and mixed syncytial and stromal pathology (9). The women with gestational diabetes had 6 infants who had various complications and 4 stillborn infants. The women with a slope of the plasma glucose disappearance curve (K value) below 1.00 had a higher incidence of pathology (65 percent) than the women with a K value between 1.01 and 1.30. Fetal complications were associated with mixed syncytial and stromal pathology or with stromal pathology alone if it was in the form of severe edema and hemorrhage. The control group had infants with uncomplicated neonatal courses. It appears that phase-contrast microscopic examination of the placenta at the time of delivery can be used to predict fetal prognosis. (38 refs.) - *R. Froelich.*

Medical College of Georgia
Augusta, Georgia 30902

Prevention and Etiology (General)

1062 SLATIN, MARION. Extra protection for high-risk mothers and babies. *American Journal of Nursing*, 67(6):1241-1243, 1967.

Intrapartum as well as prenatal and postnatal care is necessary to reduce mortality rates and infant abnormalities in high-risk mothers and infants. The clinic of the University of Nebraska Medical Center offers mothers' classes, a dystocia clinic for high-risk mothers, an intrapartum clinic focusing on the prevention of fetal damage, special neonatal care for high-risk babies, and follow-up visits by public health nurses. Free antepartal services, chartered bus service, and a child care center where mothers may leave their children while they attend clinic and classes are provided in areas where the infant mortality rate is high. The percentage of unregistered mothers, perinatal mortality rate #2, and neonatal death rate dropped during the first year the clinic was in operation. Prenatal and postpartal clinic visits have risen, but a comprehensive evaluation of results must await long-range follow-up. (1 ref.; 4-item bibliog.) - *E. G. MacGregor.*

University of Nebraska
Medical College
Omaha, Nebraska

1063 RATANASOPA, VANNEE, SCHINDLER, ADOLF E., LEE, TZU Y., & HERRMANN, WALTER L. Measurement of estriol in plasma by gas-liquid chromatography: Its significance in the treatment of high-risk pregnancies. *American Journal of Obstetrics and Gynecology*, 99(3):295-302, 1967.

Plasma estriol can be accurately measured by acid hydrolysis, phenolic extraction, thin-layer chromatography, and gas-liquid chromatography. Protein precipitation reduced values by 40 percent. Tritium estriol was used as an internal standard. Normal pregnancies ranged from 0.5 microgram to 3 microgram at 25 weeks and gradually increased to 9-22 microgram at term. Elevations were caused by low renal clearance. Diabetes, preeclampsia, and fetal death were associated with low levels. Rh incompatibility produced no changes in plasma estriol. Plasma estriol measurement, although more difficult than urinary estriol measurement, may allow earlier detection of placental abnormalities and reduce the error caused by cardiovascular and renal disease. (37 refs.) - *W. A. Hammill.*

University of Washington
School of Medicine
Seattle, Washington

1064 RICHARDS, I. D. G., & *ROBERTS, C. J. The "at risk" infant. *Lancet*, 2 (7518):711-713, 1967.

Evidence in the literature shows that the "at risk" concept is an unsound basis for the detection of handicapping diseases in infancy. The acceptance of an "at risk" register has produced a situation in which an undefined population is being screened for undefined conditions, frequently by untrained people. The information from maternity units has not always been adequate for compiling the registers. The 2-tier screening procedure implied by the "at risk" concept has doubtful sensitivity and specificity, both of which depend (1) on the closeness of the relationship between risk factors and the handicap, and (2) on the incidence of these risk factors and handicaps. Handicapping disorders can be categorized into neuropsychiatric disorders, hearing defects, congenital malformations, and metabolic disorders. The first category includes uncomplicated developmental retardation, minimal cerebral damage, and cerebral palsy. The many statistically-significant associations that have been demonstrated between risk variables and handicaps has made the "at-risk" population extremely sizeable and unmanageable for it may include 1/2 of all births. There is no alternative to adequate clinical examination and follow-up coupled with appropriate metabolic and auditory screening. (16 refs.) - *R. Froelich.*

*Department of Social and Occupational Medicine
Welsh National School of Medicine
The Parade, Cardiff, Wales

1065 SWALLOW, KATHLEEN A., & DAVIS, GEORGE H. 645 days in maternity and infant care. *Children*, 14(4):141-146, 1967.

Under the maternity and infant care project in Baltimore (Maryland) mothers and infants in the "high risk" category have available integrated, continuous, interdisciplinary care through gestation, delivery, and for 1 year thereafter. A maternal "high risk register" is used to direct the mothers to those services which will best meet their needs. The maternity center has dental, nutritional, nursing, pediatric, social, and psychiatric services which work together to improve the health and outlook of the mother and give the infant a better chance of survival. (2 refs.) - *E. F. MacGregor.*

Baltimore City Health Department
Baltimore, Maryland

1066 VALENTI, CARLO, & VETHAMANY, SHAMA K. Functional anatomy of a cytogenetic service. *American Journal of Obstetrics and Gynecology*, 99(3):434-457, 1967.

A new cytogenetic service which has been in operation for 16 months has already proved to be very efficient and valuable. The total cost of the minimal equipment needed to initiate such a laboratory is estimated at $8,600. Nuclear sexing, and chromosomal analysis by blood or tissue culture precede photography and karyotyping. Selection of cases is determined by the necessity of genetic counseling, diagnosis, or research interest. Thirty-nine cases were referred for genetic counseling purposes, and 20 of these had Down's syndrome. Other situations included consanguinity and habitual abortion. Most of the 50 cases studied for diagnostic purposes were associated with MR. Diagnoses included trisomy E (3), trisomy G (1), Klinefelter's syndrome (1), and Turner's syndrome (1). Of the 38 cases accepted for research reasons, 10 had Gregg's syndrome, 3 had Brachman-De Lange syndrome, and 1 had Blackfan-Diamond syndrome; karyotypes were normal in all cases. Two brothers with MR and Duchenne type pseudohypertrophic muscular dystrophy were found to be mosaics with an extra small metacentric chromosome. Recommendations for cytogenetic evaluation include analysis of at least 3 tissues and the study of all family members, specifically the meiotic study of the father's testicular tissue. (196 refs.) - *R. Froelich.*

450 Clarkson Avenue
Brooklyn, New York

Etiologic Groupings

Infections, Intoxication, and Hemolytic Disorders

1067 MENSER, MARGARET A., DODS, LORIMER, & HARLEY, J. D. A twenty-five-year follow-up of congenital rubella. *Lancet*, 2 (7530):1347-1350, 1967.

Fifty patients with congenital rubella, born in New South Wales after the rubella epidemic which reached its peak in 1940, were assessed. Forty-eight were deaf; 26 had typical cataracts or chorioretinopathy, and 2 had small undiagnosed lens opacities; 25 were below the tenth percentile for weight and/or height, and 20 had minor skeletal defects; 11 had congenital cardiovascular defects, 3 had systemic arterial hypertension, and 1 had undiagnosed diabetes mellitus. Six of 22 males had undescended testes and 1 female had vaginal stenosis. Of 11 married patients, 7 had reproduced 8 children, of whom 7 were normal and 1 had congenital rubella. A striking feature was the good socioeconomic adjustment made by most patients. Mental deficiency was present in 5 but was severe in only 1; the majority seemed to be of average intelligence, and 2 had completed their education at a tertiary diploma level. At the time of interview only 4 were unemployed, including 1 controlled schizophrenic. The developmental potential of many patients had been assessed erroneously during the preschool period. (13 refs.) - *Journal abstract.*

P. O. Box 34
Camperdown, New South Wales 2050
Australia

1068 DENT, P. B., *OLSON, G. B., GOOD, R. A., RAWLS, W. E., SOUTH, M. A., & MELNICK, J. L. Rubella-virus/leucocyte interaction and its role in the pathogenesis of the congenital rubella syndrome. *Lancet*, 1(7537):291-293, 1968.

The pathogenesis of persistent virus excretion in infants with the congenital rubella syndrome remains an immunological paradox. The presence of circulating 19S rubella-virus-neutralizing antibody indicates that an immune response has been provoked by the virus and that tolerance in the usual sense of the word is not present. From the existing knowledge of those host factors involved in resistance to virus infection, a defect in cellular immune functions is postulated as underlying the failure of the tissues of some infants with the congenital rubella syndrome to terminate virus excretion. Attempts to demonstrate specific cellular immunity to rubella virus *in vitro* were unsuccessful, probably for the same reasons that cellular immunity may be deficient *in vivo*. Rubella-virus infection of human lymphocytes results in inability of these cells to undergo the metabolic changes requisite to their recruitment for immunological functions. (45 refs.) - *Journal summary.*

*Immunoglobulin Reference Center
National Cancer Institute
Washington, D. C.

1069 KENRICK, K. G., SLINN, ROBYN F., DORMAN, D. C., & MENSER, MARGARET A. Immunoglobulins and rubella-virus antibodies in adults with congenital rubella. *Lancet*, 1(7542):548-551, 1968.

Fifty adults with congenital rubella were compared with blood-donors of the same age, sex, and racial background with respect to serum-immunoglobulin levels and rubella-virus hemagglutination-inhibition antibody (HI) titres. All rubella patients were well when tested and none had a history of an abnormal incidence of intercurrent infection. There was a statistically significant elevation of total immunoglobulin levels and IgG in males, and of IgA in females. The distribution of HI titres in the test group was distinctly different from the controls. Six test patients had no significant HI antibody and 16 of the remainder had a low titre ranging from 1/20 to 1/40. Similar low titres of antibody were absent from the controls even though 28 of 84 had no significant antibody level. No interrelationship was observed between the clinical severity of the disease, immunoglobulin levels, and HI antibody titres. (24 refs.) - *Journal abstract.*

P. O. Box 34
Camperdown, New South Wales 2050
Australia

1070 KRUGMAN, SAUL. Prospects for vaccination against rubella. *Archives of Environmental Health*, 15(4):495-497; discussion, 497-501, 1967.

A live, attenuated rubella virus vaccine (HPV-77) which appears to promise safe immunogenicity is being developed and may be available by 1969. The considerable medical and social problems resulting from rubella were pointed up by a study of 344 infants with congenital rubella who were followed 8 to 18 months after birth. Abnormalities found in 271 included congenital heart disease (52 percent), hearing loss (52 percent), cataract or glaucoma (40 percent), psychomotor retardation (40 percent), and neonatal purpura (31 percent). Of the 271 infants, 13 percent died. In a discussion of immunizations, the need for measles surveillance and immunization of selected susceptibles is stressed. Also discussed are the possibility of eradication of measles; the use of trivalent polio vaccine in infants; the advisability of periodic polio boosters; and the administration of polio, measles, and influenza vaccines to military personnel and college students. (9 refs.) - *D. Martin.*

550 First Avenue
New York, New York 10016

1071 MAJER, R. Roteln: Epidemiologische Untersuchungen und Erfahrungen mit einem attenuierten Impfstoff ["Cendehill strain"]. (Rubella: Etiologic investigation and experience with an attenuated vaccine ["Cendehill strain."]) *Helvetica Paediatrica Acta*, 22(6):579-590, 1967.

The occurrence of hemagglutination-inhibiting rubella antibodies was examined in serum specimens of 215 women, 146 men, and 129 children and adolescents from Zurich and the nearby vicinity. Antibodies were found in about 10-20 percent of the under-10-year-old children. People between 15 and 40 years were seropositive in approximately 85 percent. This means that about 1/6 of all the people at this age could possibly infect themselves with rubella. Men were found to be significantly more often seropositive than women in the same age group. Thirty persons, 23 of them being seronegative, were inoculated with rubella-"Cendehill strain"-live-vaccine. The vaccine showed good immunogenic properties. Clinically it did not evoke any rubella symptoms and does not appear to be infectious for contacts. (27 refs.) - *Journal summary.*

No address

1072 SEARS, M. L. Congenital glaucoma in neonatal rubella. *British Journal of Ophthalmology*, 51(11):744-748, 1967.

Congenital glaucoma was found in 23 of 150 Ss with proven neonatal rubella syndrome. The diagnosis of congenital glaucoma requires demonstration of raised intraocular pressure with decreased outflow facility; it may be associated with an enlarged cornea, corneal opacities, and optic atrophy. Virus was found in all eyes cultured. Altered corneal opacity is common in congenital rubella without glaucoma. Many cases of congenital glaucoma resolve spontaneously without permanent sequellae. During followup, treatment may include carbonic anhydrase inhibitors and epinephrine; viral cultures and serological testing may aid in confirming a diagnosis. If progressive corneal changes and persistent elevation of intraocular pressure occur, surgical intervention becomes necessary. The choice between goniotomy, filtering procedure, or cyclodiathermy depends on the individual circumstances. (44 refs.) - *W. A. Hammill.*

33 Cedar Street
New Haven, Connecticut 06510

1073 Chromosomes in congenital rubella. *Lancet*, 2(7511):351, 1967.(Annotation).

Rubella virus produced varied effects on different cell types during *in vitro* studies. The mechanism for creation of chromosome breaks has been observed *in vitro* but is not clearly in evidence *in vivo*. Although chromosome breaks have been observed in surgical termination of a rubella-infected pregnancy, they are not uncommon in spontaneous abortions. The persistence of the virus in human cells raises concern about what happens to the virus in the descendents of infected cells. Is the infectivity of rubella virus lost forever when attempts to recover the virus in post-natal life fail? (12 refs.) - *W. Asher.*

No address

1074 SEVER, JOHN L. Rubella as a teratogen. In: Woollam, D. H. M., ed. *Advances in Teratology: Volume Two*. New York, New York, Academic Press, 1967, Chapter 4, p. 127-138.

The 1963-1965 rubella virus (RV) epidemics provided data revealing the true significance

of the infection, new laboratory techniques, and experimental animal systems for further study of the teratogen. The type and frequency of malformations associated with maternal rubella infection are influenced by the time of the infection. Highest frequencies of malformation occur with infection during the first month of pregnancy (41 percent); malformation decreases during the second (22 percent) and third (7 percent) months. Defects include disorders of the eyes (50 percent), heart (30 percent), and hearing (30 percent) and MR (10 percent). Approximately 30 percent of those cases in which rubella occurs early in pregnancy result in fetal infection. Children are infectious for at least 6 months after birth and may present with the acute disease: thrombocytopenia with petechia and ecchymosis (50 percent), hepatosplenomegaly (40 percent), pneumonia on X-ray (40 percent), and radioluscencies of the long bones on X-ray (60 percent). The fluorescent antibody test, the neutralization test, and a complement fixation test are available for determination of antibody levels. Detection of the RV on African green monkey kidney depends on the ability of the virus to block superinfection by enteroviruses. Virus recovery studies have shown that infection was limited to only the placenta or occurred in the placenta and most of the fetal organs. This latter pattern has been found in association with the congenital rubella syndrome. RV appears to produce teratogenesis by a direct influence at the cellular level and thus inhibit cell multiplication. (29 refs.) - *A. C. Molnar.*

1075 HILLEMAN, MAURICE R., BUYNAK, EUGENE B., WEIBEL, ROBERT E., & STOKES, JOSEPH, JR. Live, attenuated mumps-virus vaccine. *New England Journal of Medicine*, 278(5):227-232, 1968.

Jeryl-Lynn strain (B level) live, attenuated mumps-virus vaccine was administered to 6,283 initially susceptible children and 163 adults, including 132 males. There was no evident clinical reaction to the vaccine either in adults or in children including infants. The overall seroconversion rate was 96.9 percent for children and 92.6 percent for adults. The protective efficacy shown on natural mumps challenge was of the order of 95 percent, and such protection was shown to last for at least 20 months. The neutralizing antibody induced by the vaccine persisted for at least 2 years without substantial decline and the pattern closely resembled that for antibody persistence after naturally acquired mumps. The vaccine could be coadministered with live measles vaccine, with satisfactory responses to both. (11 refs.) - *Journal abstract.*

Merck Institute for Therapeutic Research
Division of Virus and Cell Biology Research
West Point, Pennsylvania 19486

1076 ROTH, ALEXANDER. Immunization with live attenuated mumps virus vaccine in Honolulu. *American Journal of Diseases of Children*, 115(4):459-460, 1968.

Six hundred eighty-three children were immunized with live attenuated mumps virus vaccine. There were no apparent ill effects and all of the seronegative children tested developed mumps antibody. (5 refs.) - *Journal summary.*

1697 Ala Moana Boulevard
Honolulu, Hawaii 96815

1077 KATZ, SAMUEL L. Eradication of measles in the United States (symposium). *Archives of Environmental Health*, 15(4):478-484, 1967.

Aspects of the development and use of live measles vaccines are reviewed, and the record of safety and efficacy in the United States is surveyed. The attenuated vaccines in general use are Edmonston B and further attenuated Edmonston B (FAV). Between March 1963 and March 1966, 15 million doses of these vaccines were administered, at first with concomitant gamma-globulin injections but later without gamma-globulin. Complications followed immunization in only 30 instances, and only once was there clear evidence that the vaccine was causative. The efficacy of the vaccines is demonstrated by their ability to induce and maintain antibody formation in up to 95 percent or susceptible cases and to protect those immunized even when they are intimately exposed 4 or 5 years later. Reported incidence of measles in the United States during a 28-week period ending in March 1966 was the lowest in 20 years (although only 2/5 of susceptible cases

311-967 O - 68 - 2

had received the vaccine). Contraindications to measles vaccination are limited essentially to conditions of impaired defense against antigens and pregnancy. Vaccination is not recommended until age 1, and should not be done within 30 days of administration of another live virus vaccine. (18 refs.) - *D. Martin.*

300 Longwood Avenue
Boston, Massachusetts 02115

1078 MUMBY, DOROTHY M. Measles protection for 11,497. *Canadian Nurse*, 64(1):28-31, 1968.

During a rubeola immunization program conducted in London, Ontario, Canada, in April 1967, 11,497 children (ages 1 to 12) received Schwarz live, attenuated measles vaccine during a 6-hour period. Aspects of the planning, publicity campaign, and the procurement and briefing of 250 volunteer workers are presented together with a description of the procedures and materials. The $14,000 cost of the vaccine was paid by the city as a "Centennial gift to its children." Children were excluded if they had a history of measles, measles vaccination, tuberculosis, leukemia, cancer, or egg allergy. Also excluded were those with fever over 101°, those who had received another live virus vaccine or gamma globulin within the previous month, and those who had had convulsions within the previous 5 years. Only 133 calls relative to adverse reactions were received, and no severe reactions or secondary complications were reported. (5 refs.) - *D. Martin.*

City of London Board of Health
London, Ontario, Canada

1079 HUTCHISON, D. A. Measles vaccines. *Canadian Nurse*, 64(1):26-27, 1968.

Advances in measles prevention are reviewed and the history and merits of live attenuated Edmonston and Schwarz vaccines are discussed, especially with regard to antibody response, reactions, indications, and contraindications. Live vaccines should not be used until an infant is 9 months of age. They are especially recommended for children with chronic systemic and cardiopulmonary diseases but are contraindicated for children with egg allergy, leukemia, generalized malignancies, acute febrile or respiratory illnesses, active tuberculosis, or for those on steroids, antineoplastic drugs, or radiation treatments. Killed measles vaccine is also in use, but severe reactions have been reported when live attenuated vaccine is given subsequent to it. (4 refs.) - *D. Martin.*

City of London Board of Health
London, Ontario, Canada

1080 HOVIG, DALLAS E., HODGMAN, JOAN E., MATHIES, ALLEN W., JR., LEVAN, NORMAN, & PORTNOY, BERNARD. Herpesvirus hominis (simplex) infection. *American Journal of Diseases of Children*, 115(4):438-444, 1968.

Three patients with a nonfatal recurrent form of herpes virus (HV) disease beginning in the newborn period have been presented. The remarkably uniform clinical picture was characterized by primary nonvesicular cutaneous lesions present at birth. Crops of vesicles superimposed on these lesions appeared during the first week of life without early evidence of systemic involvement, and recurrences of grouped vesicles appeared throughout infancy. HV was isolated from vesicular fluid in each case. Despite the absence of systemic symptoms during the neonatal period, CNS involvement was apparent in 1 patient at 14 months of age. The findings suggested that the primary manifestations of neonatal HV infection might be nonvesicular and that this form of neonatal infection is more common than previously recognized. (29 refs.) - *Journal summary.*

1200 North State Street
Los Angeles, California 90033

1081 MAY, G., DAHN, R., & REUSS, K. Herpes simplex virus as a cause of encephalitis: Report of five cases. *German Medical Monthly*, 12(8):377-380, 1967.

Five cases of encephalitis in which herpes simplex virus was documented as the etiologic agent are described. The virus was identified by tissue culture and animal studies of

brain tissue from autopsy in 3 cases, brain biopsy in 1 case and cerebrospinal fluid in the 1 case that survived. Case 1 was a premature infant who developed conjunctivitis at 8 days of age followed by rapid, unexpected death at 16 days of age. Case 2 was a 44-year-old man who died 10 days after the onset of a fulminating encephalitis. Case 3 was a 4-month-old infant who presented with fever, spasms, apathy, and somnolence and who improved after 9 days of illness and recovered without apparent residual damage until 1 month later, when the child showed MR and physical retardation. Case 4 was a 35-year-old man who suddenly became ill and underwent a craniectomy because of suspected brain tumor. He died 38 days after the onset of the illness. Case 5 was a 53-year-old woman who developed acute encephalitis and died 16 days after onset. Herpes virus was isolated without difficulty in fresh and permanent cell cultures. The infant who survived showed a great increase in antibody titer as well as virus in the cerebrospinal fluid. Until recently, herpes simplex encephalitis was rarely reported. (18 refs.) - *R. Froelich.*

Hygiene-Institut
Paul-Ehrlich-Str. 40,
Frankfurt, Germany

1082 HARLAND, W. A., ADAMS, J. H., & McSEVENEY, D. Herpes-simplex particles in acute necrotising encephalitis. *Lancet*, 2(7516):581-582, 1967.

Intranuclear virus particles, morphologically identical to herpes-simplex, were found by electron microscopy of brain biopsies in 7 Ss with acute necrotizing encephalitis. Six Ss died, and 1 recovered after treatment with idoxuridine and decompression. Viral cultures for herpes-simplex were positive in 2 of 4 cases. The initial culture was positive in 1 S, the second negative. This indicates that a negative viral culture does not preclude the diagnosis of herpes-simplex. No other agent has been consistently demonstrated in Ss with acute necrotizing encephalitis. The encouraging response to chemotherapy and decompression makes the search for intranuclear particles important in diagnosing encephalitis. (17 refs.) - *W. A. Hammill.*

University of Glasgow
Western Infirmary
Glasgow W1, Scotland

1083 Acute necrotizing encephalitis. *British Medical Journal*, 3(5569):812-813, 1967.

Although encephalitis is difficult to diagnose, acute necrotizing encephalitis is being clinically determined more frequently; the data being collected indicates that many of these cases are caused by the herpes simplex virus. The disease which may be found in either sex at any age may progress from general malaise, pyrexia, and possibly upper respiratory infection through slight neck stiffness, headaches (with some confusion), convulsions, and hemiparesis. Cells in the cerebrospinal fluid have a raised count, high protein, normal sugar content, and characteristics suggesting inflammation. EEGs are almost always abnormal; echo-encephalography, arteriography or ventriculography may indicate a lesion. Biopsy will reveal only necrotic tissue, but the brain tissue can be tested for the herpes simplex virus and the blood for the herpes antibody. Mortality is high, although apparent partial cures have been achieved with corticosteroids and antibiotics. Histology shows selective necrosis in grey matter, orbital and cingulate gyri, the insula, and white matter of the temporal lobes. (3 refs.) - *E. F. MacGregor.*

1084 Acute necrotising encephalitis. *Lancet*, 2(7516):604, 1967. (Annotation)

History, etiology, pathology, differential diagnosis, and treatment of acute necrotising encephalitis are discussed. The herpes-simplex virus was first isolated from a human brain in 1941, and since then more than 100 cases have been reported. The clinical picture of confusion and hyperpyrexia, often with hemiplegia, neck stiffness, and convulsions, must be distinguished from temporal-lobe damage and swelling due to other causes. Mortality is very high. Idoxuridine may prove to be of value, but its toxicity has produced leukopenia, stomatitis, and alopecia. (23 refs.) - *J. Snodgrass.*

1085 ZINKHAM, WILLIAM H., MEDEARIS, D. N., & OSBORN, J. E. Blood and bone-marrow findings in congenital rubella. *Journal of Pediatrics*, 71(4):512-524, 1967.

Twenty-one infants with congenital rubella syndrome were found to have a number of

peripheral blood abnormalities including thrombocytopenia, anemia, intermittent leukopenia, and bone marrow abnormalities of reticulum cells. Twenty of the 21 infants had one or more congenital anomalies, and 18 had central nervous system involvement. Four died before 6 months of age. Although only 8 showed thrombocytopenia, this abnormality probably would have been detected more often if platelet counts had been made in the first week of life. Anemia was present in 7 and was associated with bizarrely shaped red cells, slight to moderate reticulocytosis, and moderate normoblastemia. Red cell survival time was decreased by about 50 percent in 2 infants studied. Five infants showed phagocytic reticulum cells in their bone marrow. Cells that were ingested included mature red cells, erythroid precursors, lymphocytes, and other reticulum cells. No specific explanation for this activity was discovered. Bone marrow cultures were positive for rubella virus in 9 infants. Recovery of virus correlated with increased severity of the infection. Treatment considerations for hematological abnormalities in the congenital rubella syndrome include corticosteroids and platelet transfusions, but specific therapy for the actively bleeding infant remains uncertain. (43 refs.) - *R. Froelich.*

The Johns Hopkins University
School of Medicine
Baltimore, Maryland

1086 GRAYSTON, J. THOMAS, PENG, JUI-YUN, & LEE, GEORGE C. Y. Congenital abnormalities following gestational rubella in Chinese. *Journal of the American Medical Association*, 202(1):1-6, 1967.

After an epidemic in which an estimated 1,000,000 people in Taiwan, Formosa, developed rubella, a study of the risk to pregnant women showed that the fetuses of about 25 percent of those who had developed rubella in the first trimester were seriously affected. A total of 117 pregnant women with rubella were identified, 35 of whom had had rubella during the first trimester. Ten congenital abnormalities were found in the first trimester group and one in the rest of the children. The total number of fetal deaths - 9 (26 percent) in the first trimester group and 5 in the remainder (6 percent) - was not statistically significant because of the small numbers involved. Nine surviving infants from the first trimester group had anomalies. Abnormalities included deafness in 5, subnormal intelligence in 3, borderline intelligence in 1, retinal pigmentation in 4, lenticular opacities in 2, and heart murmurs in 3. The children's mental status was estimated from interview, "draw-a-person," modified Bender Gestalt, and modified Stanford-Binet tests. No significant differences of birth weight were found. The rubella epidemic occurred in 1957-1958, and this study included a 5-year follow-up examination. This report is the first prospective study that involves an Oriental population and rubella infection in pregnant women. (29 refs.) - *R. Froelich.*

University of Washington
School of Medicine
Seattle, Washington 98105

1087 MEDEARIS, DONALD N. Current information concerning cytomegalic inclusion disease and cytomegaloviruses. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 11, p. 155-166.

A review of research findings on cytomegaloviruses (CMV) and cytomegalic inclusion disease (CID) revealed that the effects of *in utero* CID or neonatal CMV infections regularly included jaundice, hepatosplenomegaly, and thrombocytopenic purpura as well as frequent cases of focal and severe MR, microcephaly, seizures, deafness, spasticity, and pulmonary involvement. Biological studies indicated that human CMVs contain DNA, begin an inefficient type of synthesis in the nucleus, progress by acquiring an additional membrane as particles pass through the nuclear membrane, and spread in a contiguous cell-to-cell manner. Comparisons of the characteristics of human and murine CMV infections revealed both significant similarities and distinctive differences, but factors accounting for the differences in the effect of maternal CMV on the conceptus of these 2 species have not been identified. (28 refs.) - *J. K. Wyatt.*

1088 FELDMAN, ROGER A., & SCHWARTZ, JAMES F. Possible association between cytomegalovirus infection and infantile spasms. *Lancet*, 1(7535):180-181, 1968.

Cytopathic agents with characteristics of the cytomegalovirus group were isolated from the urines of 3 of 6 children under 1 year of age

with the clinical syndrome of infantile spasms, and from only 2 of 28 children, seen for routine care and minor illnesses, and of similar age and socioeconomic group. Although the small number of children examined precludes a definite statement regarding the epidemiological significance of the findings, the results suggest a possible association between the syndrome of infantile spasms and infection with cytopathic agents with characteristics of the cytomegalovirus group. Clinical and virological studies in other centers where larger numbers of children with infantile spasms are seen in the first year of life are needed to investigate this problem more extensively. (11 refs.) - *Journal abstract.*

National Communicable Disease Center
Atlanta, Georgia

1089 DE GIACOMO, P., CAPPIELLO, J., & PERNIOLA, T. Haloperidol in subacute sclerosing leucoencephalitis. *Lancet*, 2 (7525):1095, 1967. (Letter)

Case material is presented on a 19-year-old girl with mental regression, myoclomic head and arm movements, and postures resembling fencing positions. Subacute sclerosing leukoencephalitis was diagnosed from EEG, cerebrospinal fluid and cerebral biopsy. Symptoms were strikingly reduced within 24-48 hours when 4 mg/day of haloperidol were administered. (No refs.) - *J. Snodgrass.*

Clinic for Nervous and Mental Diseases
Bari University
Bari, Italy

1090 LEIBOWITZ, S., KENNEDY, LESLEY A., & LESSOF, M. H. Antilymphocyte serum in the later stages of experimental allergic encephalomyelitis. *Lancet*, 1(7542):569-570, 1968.

An antilymphocyte serum raised by injection of guineapig thymocytes into rabbits was given to guineapigs at various stages in the development of experimental allergic encephalomyelitis. Early treatment was as effective as that given later, during the development of the inflammatory lesion in brain and cord. The serum also prolonged the survival of paralyzed animals. The major effect is immunosuppressive, although the speed with which established disease is inhibited implies some peripheral influence - on the sensitized lymphocyte or on the inflammatory reaction. (16 refs.) - *Journal abstract.*

Guy's Hospital
London S. E. 1, England

1091 ČERVA, L., & NOVÁK, K. Amoebic meningoencephalitis: Sixteen fatalities. *Science*, 160(3823):92, 1968.

The parasitologic examination of pathologic brain tissue from 16 cases of acute purulent meningoencephalitis occurring between 1962 and 1965 in northern Bohemia disclosed massive infection of the central nervous system by amoebas of the limax type. The common source was an indoor swimming pool. (5 refs.) - *Journal abstract.*

Army Institute of Hygiene
Epidemiology and Microbiology
Prague, Czechoslovakia

1092 SAXONI, FOTINI, LAPATSANIS, PETER, & PANTELAKIS, STEPHANOS N. Congenital syphilis: A description of 18 cases and reexamination of an old but ever-present disease. *Clinical Pediatrics*, 6(12):687-691, 1967.

Eighteen infants with congenital syphilis, 13 of whom survived, were followed for 6 to 18 months. The diagnosis of congenital syphilis was based on a positive serologic test for mother and child; radiological evidence of periostitis and osteochondritis in the long bones; and blood changes such as reticulocytosis, thrombocytopenia, immature white blood cells, macrocytic anemia, or nucleated red blood cells. In order of frequency, the most common clinical manifestations were hepatomegaly (94 percent), splenomegaly (78 percent), pallor, jaundice, prematurity, rash, loss of weight, edema, and rhinitis. The infant with severe clinical manifestations, in spite of earlier diagnosis, had a much higher risk of death. Only 1 mother had been tested for syphilis during pregnancy and in this case, no treatment was instituted despite a positive serology. All but 2 infants had

bone lesions and blood changes. All but 1 infant and 1 mother had a positive serology for syphilis. Treatment in all cases was intramuscular injection of penicillin G, 1,000,000 units/day for 2 weeks. There was no evidence of meningitis. The incidence of syphilis around the world is increasing and is again a public health problem. (13 refs.) - *R. Froelich.*

Aghia Sophia Children's
Hospital
Goudi, Athens 608, Greece

1093 HOFFMAN, F. DONALD, &*HERWEG, JOHN C. Status of serological testing for congenital syphilis. *Journal of Pediatrics*, 71 (5):686-690, 1967.

A questionnaire designed to examine the status of serological testing for syphilis (STS) among pediatric patients disclosed that only 11 percent of the respondents were routinely tested for syphilis despite a doubling of reported congenital syphilis in the last decade. Of the 302 questionnaires sent to Chiefs of Service of American Medical Association approved pediatric residency training programs, 193 responded. Only 22 programs routinely test in-patients and 171 test only when indicated. Ten programs test outpatients routinely and 155 test only when indicated. Most widespread screening STS used is the qualitative Veneral Disease Research Laboratory (VDRL) test which was used by 185 of the laboratories. Testing is done on venous blood by 153 laboratories, capillary blood by 9, and either by 31. Confirmatory tests used are Kolmer (66), Fluorescent Treponemal Antibody (60), Reiter Protein Complement Fixation (55), Quantitative VDRL (28), and Treponema pallidum Immobilization (22). Hospitals routinely testing found a 0.6 percent positive test rate and those doing STS when indicated found a 1.5 percent rate. There is a need for a micromethod for STS employing capillary blood. The incidence of syphilis (1/10,000), the ease and effectiveness of therapy, the rise in primary and secondary syphilis all warrant routine STS of pediatric patients. The rapid plasma reagin (circle) card test is a simple, inexpensive, and reliable screening test applicable to pediatrics and favorably comparable to the VDRL test in specificity and sensitivity. (8 refs.) - *A. C. Molnar.*

*St. Louis Children's Hospital
500 South Kingshighway
St. Louis, Missouri 63110

1094 MITCHELL, SHIELA C., & WOODSIDE, GILBERT L. Virus etiology of congenital malformations. *Science*, 157(3794):1337-1338, 1967.

A multidisciplinary conference discussed the problems of studying the viral etiology of congenital malformations. The effects of virus infection of cells are lytic replication, non-lytic replication with or without cell destruction, and cell replication without viral replication. Rubella virus inhibits its nuclear controlled protein synthesis. There is a critical age beyond which a virus will not cause malformations, depending on fetal immunologic competence. Early infection may cause abnormal organogenesis (either growth or maturation), while later infection may cause damage, resorbtion, or degeneration of organs. The role of the placenta in fetal infections is uncertain. Baboons, because of the many similarities with humans (placenta, ovulation, embryogenesis), may be the best experimental animal for studies of viral embryogenesis. The multiplicity of viruses and their possible modes of action will require a multidisciplinary approach for solution. (No refs.) - *W. A. Hammill.*

National Heart Institute
Bethesda, Maryland

1095 JOHNSON, RICHARD T., & MIMS, CEDRIC A. Pathogenesis of viral infections of the nervous system (Concluded). *New England Journal of Medicine*, 278(2):84-92, 1968.

Studies have shown that viruses gain entrance to and spread within the central nervous system (CNS) by various means, and their pathogenic effects vary from species to species and according to the virus involved. While neural and olfactory routes of entrance have been implicated, hematogenous invasion through capillaries within the brain or choroid plexi appear to be the most important. Although the mechanism causing viruses to spread within the CNS is obscure, postulated ways include: movement within the extracellular spaces, transport across nonsusceptible cells, and spread across cellular processes of contiguous cells. Furthermore, neural, glial, ependymal, and meningeal cells vary in their susceptibility to infections according to the virus and species involved. Current studies point to the presence of specific membrane receptors on the cell as being the necessary factors responsible for the cells' susceptibility. Also the pathological

changes induced in affected cells differ in their type, extent, reversibility, and latency. Evidence points to cell dysfunction rather than disruption as being the cause of fatal disease in some infections. Prolonged virus infections have recently been shown to cause chronic human neurological disease and to induce neoplastic transformation of CNS cells in some animals. Immunological mechanisms also appear to be involved in the production of some viral CNS diseases, but the mode appears unclear at present. Finally, the blood-brain barrier, which acts as a protective mechanism, is not a discrete anatomical entity, but a composite of all the host defense mechanisms. (124 refs.) - *E. Gaer.*

Cleveland Metropolitan
General Hospital
3395 Scranton Road
Cleveland, Ohio 4410

1096 KELEN, A. E., LESIAK, J. M., & *LABZOFFSKY, N. A. Central nervous system involvement associated with unclassified echovirus types. *Canadian Medical Association Journal*, 98(10):478-491, 1968.

From specimens of patients suffering from various clinical conditions during the past several years, a number of viral agents were isolated which showed properties of enteroviruses but could not be identified as any of the 62 types recognized at present. On the basis of the serological relationship, a large proportion of these isolates were grouped into 3 distinct antigenic types. Results of virological studies performed on representative strains of the 3 virus types revealed that each of them has properties characteristic of the echoviruses and fulfils the criteria required for new candidates of the unclassified picornavirus group of human origin. All 3 virus types were found to occur sporadically in the Province of Ontario and mostly in patients who showed signs of central nervous system involvement (suspected poliomyelitis, encephalitis or meningitis). The etiological significance of 2 virus types was established by isolations made from the cerebrospinal fluid. One virus type comprised fecal isolates only. The causative role of each, including the latter, was confirmed serologically. (8 refs.) - *Author summary.*

Ontario Department of Health
Box 9000
Terminal "A"
Toronto 1, Ontario
Canada

1097 SCHNEIDER, J., PREISLER, O., HAERING, M., KRÜGER, H., WELSCH, H., ALTHOFF, W., STAHL, M., & SCHELLONG, G. Prevention of haemolytic disease of the newborn by anti-D serum given to the mother. *German Medical Monthly*, 12(12):570-571, 1967.

A joint study initiated in 1965 at several German centers confirms the findings of British and American workers that anti-D prophylaxis prevents Rh-sensitization with a high degree of certainty. By April 1967, 198 Rh-negative women in whom a fetal-maternal microtransfusion of more than 0.05 ml had been demonstrated after the birth of an Rh-positive child had been treated with anti-D serum or immunoglobulin anti-D. None of the 126 women tested 4 to 6 months after treatment had demonstrable Rh-antibodies. None of the 16 Rh-positive children born after previous anti-D prophylaxis developed hemolytic disease of the newborn. The additional data needed for statistical evaluation of the efficacy of anti-D prophylaxis in preventing hemolytic disease should be available within 1 or 2 years. (13 refs.) - *Edited journal summary.*

Universitäts-Frauenklinik
Hugstetter Str. 55
78 Freiburg, Germany

1098 DIAMOND, LOUIS K. Protection against Rh sensitization and prevention of erythroblastosis fetalis. *Pediatrics*, 41 (1,I):1-4, 1968.

Immunization of Rh-negative women with anti-Rh gamma globulin (Anti-Rh GG) to prevent sensitization to Rh-positive (Rh-P) blood cells appears to be highly effective, and although some problems still exist primarily in the area of supply, it represents another step forward in the treatment, prevention, and possibly the total elimination of erythroblastosis fetalis (EF). Previous advances in identification of the Rh factor, exchange transfusion, and intrauterine transfusion have all greatly lowered the mortality rate of EF. The present technique utilizes the principle that a passive antibody given in doses in excess of an antigen will block active immunization. It has also been found that the protective effect against sensitization of the mother in cases of ABO as well as Rh incompatibility has been due to the destruction of Rh-P cells of the fetus by the anti-A or Anti-B antibody in the mother's blood. Two separate studies have indicated that only 1 of 628 women treated with anti-Rh GG showed serum antibodies 6 months after

pregnancy, whereas 75 of 559 untreated control cases did. This would indicate that passive maternal immunization within 72 hours following delivery protects against Rh-immunization. On follow-up, 19 of 72 unprotected control women developed antibodies during their pregnancy while none of the 74 treated women did. Because of the short supply of high titer Anti-Rh GG, treatment would initially have to be limited to high-risk mothers. Since multiparous women, those with ABO incompatibility and those with low fetal cell counts in their blood, represent a lower risk category, their treatment could be delayed until the anti-Rh GG becomes more available. The greatest danger in the present regimem would appear to be insufficient dosage, particularly in those mothers who have had a large fetal bleed into their circulation. To guarantee against this, counts to determine the amount of fetal cells in the maternal circulation would be of value to insure that a large enough dosage is given. (15 refs.) - *E. Gaer.*

Harvard Medical School
Children's Hospital Medical
Center
Boston, Massachusetts 02115

1099 Prevention of Rh hemolytic disease. *Canadian Medical Association Journal*, 97(21):1294-1296, 1967.

Research on prevention of formation of Rh-factor antibodies in Rh-negative mothers of Rh-positive but ABO-compatible infants has been conducted in Liverpool, New York, Winnepeg, and Freiburg (Germany); it shows promise of eradicating hemolytic disease of the newborn through conferring passive immunity by injection of 1 to 5 milliliters of immune globulin from sensitized Rh-negative volunteers. Data obtained from clinical trials in the various centers are presented. (10 refs.) - *D. Martin.*

1100 CULLITON, BARBARA J. Vaccine conquers baby-killer. *Science News*, 92(22): 520-521, 1967.

RhoGAM, a vaccine to prevent erythroblastosis fetalis, has been under development by Ortho Pharmaceutical Corporation since 1964 and is now being stock-piled awaiting governmental approval. It is made from blood of sensitized Rh-negative individuals and is given to an Rh-negative mother within 72 hours after delivery of an Rh-positive infant. Any Rh-positive red blood cells which entered her circulation during delivery are destroyed by the vaccine before antibody formation is stimulated. Unlike natural antibodies, which remained permanently to affect subsequent offspring, RhoGAM later disappears from the maternal circulation. (No refs.) - *D. Martin.*

No address

1101 ZIPURSKY, ALVIN, & ISRAELS, LYONEL G. The pathogenesis and prevention of Rh immunization. *Canadian Medical Association Journal*, 97(21):1245-1257, 1967.

Data suggest that Rh immunization is related to the amount of fetal blood entering maternal circulation both during pregnancy and at delivery and that passive immunization with anti-Rh antibodies both ante partum and post partum can safely prevent active immunization. When anti-Rh (D) globulin obtained by plasmapheresis of 3 women who had lost babies due to Rh-hemolytic disease was given in varying doses to experimental Ss, it shortened the life-span of Rh-positive cells present in 33 Rh-negative Ss, prevented Rh-immunization in 12 Rh-negative men, and produced antibodies in 3 of 6 controls. Rh-immune globulin given during the third trimester of pregnancy seemed efficacious in preventing isoimmunization; no ill-effects were observed in Rh-positive offspring. An acid elution technique for detecting minute quantities of fetal red cells in maternal circulation is described. (18 refs.) - *D. Martin.*

Department of Pediatrics
McMaster University
Hamilton, Ontario, Canada

1102 LUCEY, JEROLD F. Diagnosis and treatment: Current indications and results of fetal transfusions. *Pediatrics*, 41(1): 139-142, 1968.

Fetal transfusion is best indicated for a fetus of 28 to 32 weeks gestation that does not have hydrops fetalis and has a high Zone II or low Zone III ΔO.D. 450 that is rising or remaining stable. Amniocentesis is now a very low-risk procedure and should be used

for any Rh-negative mother with an Rh-antibody titer over 1/16 in the fourth or fifth month of pregnancy. Limitations on the original criteria for fetal transfusion include: more than 1 amniocentesis should be performed; if the ΔO.D. 450 is decreasing, the fetus may be left *in utero* safely; and if fetal transfusion seems needed before the twenty-eighth week of gestation, the disease is probably very severe and poor outcome will result. Since the mortality of infants with hydrops fetalis is close to 100 percent without transfusion and remains poor with transfusion, it does not seem wise to continue transfusion when known hydrops exists, for a fetus that survives will probably have cerebral damage. Only a few improvements on Liley's original technique of fetal transfusion have been made over the last 4 years. The current fetal risk of transfusion when done by experienced workers is around 5 percent. Maternal death has not occurred as a result of the procedure. The effectiveness of fetal transfusion has been estimated to be a 50 percent survival of fetuses that formerly would have died. Fetal transfusion may increase survival, but it also increases premature birth with its associated risks. Other associated problems with fetal transfusion may exist. (13 refs.) - *R. Froelich.*

Department of Pediatrics
Unviersity of Vermont College
of Medicine
Burlington, Vermont 05401

1103 KNOX, E. G. Obstetric determinants of rhesus sensitisation. *Lancet*, 1(7540): 433-437, 1968.

The problem of the clinical determinants of Rh isoimmunization during pregnancy was approached by comparing pregnancies in which sensitization occurred and pregnancies in which it did not occur. The data analysed were all births to Birmingham residents during the period 1950-59. There were over 200,000 births during this time and over 24,000 to Rh-negative women, and a large-scale computer analysis was required in order to isolate from a very large number of possible pairs, the informative pregnancy sequences. The expected yield of informative pairs was less than 1 in 1,600,000 pairs and in the end 212 changes of sensitization status were isolated, and 211 control pairs selected. Comparison of 2 groups showed that the main determinants of sensitization were toxemia of pregnancy, cesarean section, breech delivery, and a very short interval between the sensitizing and subsequent pregnancies. A combination of factors should permit the isolation from the susceptible population of a 7 percent minority which contains 25 percent of all sensitized women. These findings are of potential value both for the preselection of women likely to have suffered fetal/maternal transfusion and eligible for treatment to destroy those cells, and also for the development of techniques to prevent such transfusions occurring. (13 refs.) - *Journal abstract.*

University of Birmingham
Birmingham, England

1104 HOBBS, J. R. Immune imbalance in dysgammaglobulinaemia type IV. *Lancet*, 1(7534):110-114, 1968.

Serum-immunoglobulin measurements in 11,000 hospital patients disclosed 24 propositi and 7 out of 15 of their relatives with idiopathic isolated gamma A deficiency. A review of these patients and published reports of other patients revealed that: (1) isolated gamma A deficiency has a prevalence of 1 in 500 and can be associated with ataxia telangiectasia; and (2) 69 of 75 patients had symptoms of recurrent sinopulmonary infection, or malabsorption, or thrombocytopenia, hypersplenism, and autoimmune syndromes. Evidence of defective humoral immunity with overcompensation of cellular immunity supports the hypothesis that immune imbalance can account for the symptomatology. (40 refs.) - *Journal abstract.*

Royal Postgraduate
Medical School
London W. 12, England

1105 KRAUER-MAYER, B., KELLER, M., & HOTTINGER, A. Uber den frauenmilchinduzierten Icterus prolongatus des Neugeborenen. (Concerning prolonged icterus in newborns induced by mother's milk.) *Helvetica Paediatrica Acta*, 23(1):68-76, 1968.

A prolonged jaundice with an indirect hyperbilirubinemia was seen in 5 mature well developing babies fed on breast milk during their first month of life. The usual causes for jaundice of the newborn could be excluded. Subsequent to a stop of the ingestion of breast milk from their own mother and

its substitution by cow's milk or breast milk from other women, a decrease of the serum bilirubin could be observed in these infants. In 1 of these patients there was a renewed rise of the serum bilirubin, subsequent to a clinical test with its own mother's breast milk; in another there was a slowing down of the decrease of its bilirubin. In a control infant, 9 days old, there was a persistence of a slightly elevated serum bilirubin value, subsequent to loading with such breast milk. From all the samples of breast milk from the mothers of icteric infants Pregnan-3(α),20 (β)-diol could be isolated. No such substance could be detected in the breast milk from 4 control mothers who had healthy, anicteric infants. The spontaneous decrease of the serum bilirubin during the second month of life, in spite of the fact that breast milk feeding was continued, is explained on the basis of (a) full-maturation of the mechanism of glucuronidation of the infant and (b) by the slow decrease of the presence of the glucuronyltransferase inhibitor in the breast milk. (10 refs.) - *Journal abstract.*

Universitatskinderklinik
Basel, Switzerland

1106 BOGGS, THOMAS R., JR., HARDY, JANET B., & FRAZIER, TODD M. Correlation of neonatal serum total bilirubin concentrations and developmental status at age eight months. *Journal of Pediatrics*, 71(4):553-560, 1967.

The preliminary report from a collaborative study of 23,000 infants shows that 8-month-old infants demonstrate a relationship between low motor and/or mental scores and neonatal hyperbilirubinemia. The infants were single, live-born, and unselected for any medical reason. A total serum bilirubin (TSB) determination was done on every infant at 48 hours of age; if TSB was over 10 mg percent, the test was repeated one or more times. At 8 months of age, the infants were evaluated by the Bayley Scale of Development. For infants with a birth weight of 2,000 gm or less, each rise of 1 mg percent of serum bilirubin was associated with a decrease of total motor score of 1.8 percent. For infants over 3,000 grams birth weight, the total motor score decreased 0.5 percent for each mg percent increase of bilirubin. The low mental and motor score relationships began to rise progressively at the 16 to 19 mg percent level and did not change abruptly at 20 mg percent. Although the relationship varies according to birth weight and birth distress, the positive findings are independent and superimposed upon the high bilirubin-low motor and mental scale relationship. This study (Collaborative Study on Cerebral Palsy of the National Institute of Neurological Diseases and Blindness) will ultimately include 60,000 infants for a 7-year follow-up. (4 refs.) - *R. Froelich.*

700 Spruce Street
Philadelphia, Pennsylvania 19107

1107 ROSS, LIVIA, & FREMLAND, HARRIET. Myocardial hyperbilirubinemia in a premature infant. *American Journal of Diseases of Children*, 115(3):358-361, 1968.

Unconjugated bilirubin crystals were found in the myocardium of an infant with hyperbilirubinemia. The premature (907 gm) infant (Rh positive) of an 18-year-old primiparous woman (Rh positive) was icteric at birth and died at 7 days. Bilirubin determinations (indirect/total) were: day 1 - 11.1/12, day 2 - 13.3/14, day 5 - 16.3/17, and day 6 - 16.8/18 mg per 100 cc. At autopsy, bilirubin was found in the renal tubules and interstitium, basal ganglia, and myocardium. No cellular necrosis or inflammation was present. Unconjugated bilirubin was indicated when the parafin imbedding process removed the deposits. Hepatic architecture was normal. No ABO or Rh incompatibility or hemolysis was documented. The low level of glucuronyl transferase present in premature livers may have produced the hyperbilirubinemia. (6 refs.) - *W. A. Hammill.*

2701 14th Avenue
Oakland, California 94606

1108 WARRELL, D. W., & TAYLOR, R. Outcome for the foetus of mothers receiving prednisolone during pregnancy. *Lancet*, 1 (7534):117-118, 1968.

Thirty-four pregnancies in 30 women receiving prednisolone in the course of treatment of a general disease resulted in 8 stillbirths, and 9 fetuses were judged to have been at risk during pregnancy or parturition. In contrast, 34 pregnancies in women not receiving glucocorticoids but with similar

general diseases resulted in 1 stillbirth, 3 premature babies, and 30 healthy babies. (6 refs.) - *Journal abstract.*

University Department of
Obstetrics and Gynecology
Jessop Hospital for Women
Sheffield 3, England

1109 LEE, D. T. The effects of diazepam (Valium) on labour. *Canadian Medical Association Journal*, 98(9):446-448, 1968.

Diazepam produced no subjective improvement in relaxation, response to pain, or shortening of the stages of labor in 60 Ss. Thirty primigravida and 30 multigravida women received either diazepam (10 mg) or placebo intramuscularly after the onset of true labor but before 3 cm cervical dilitation. Analgesic and relaxant effect, newborn Apgar score, maternal and newborn side effects, and duration of the 3 stages of labor were recorded for all Ss. While the first stage of labor was shortened in the multigravidas, in the control group it was unusually long (17 hours). No adverse effects were noted in either mother or newborn. Maternal attitude was probably affected by the relaxing effect of childbirth training. Intravenous administration may enhance the relaxing effect. (13 refs.) - *W. A. Hammill.*

1257 Henry Street
Halifax, Nova Scotia, Canada

1110 DUFFUS, GILLIAN M., TUNSTALL, MICHAEL E., & MacGILLIVRAY, IAN. Intravenous chlormethiazole in pre-eclamptic toxaemia in labour. *Lancet*, 1(7538):335-337, 1968.

The records of the Aberdeen Maternity Hospital show that, in the past, results of treatment of eclampsia and pre-eclampsia were poor in terms of control of fits and baby survival. Fifty primigravida with moderate or severe pre-eclampsia have been treated with a continuous infusion of chlormethiazole (Heminevrin) 0.8 percent while in labor. The results in terms of control of the maternal condition and fetal health and survival have been encouraging. Chlormethiazole therapy allows ease of nursing and good control of the patient. Chlormethiazole crosses the placenta. (11 refs.) - *Journal abstract.*

Aberdeen Maternity Hospital
Aberdeen, Scotland
Great Britain

1111 SHAW, EDWARD B., & STEINBACH, HOWARD L. Aminopterin-induced fetal malformation: Survival of infant after attempted abortion. *American Journal of Diseases of Children*, 115(4):477-482, 1968.

A case is reported in which sodium aminopterin ingested during early pregnancy for the purpose of abortion produced severe toxic symptoms in the mother and severe damage to the infant. The cause of fetal damage is best determined by comparisons with an almost identical patient reported by Warkany *et al.* It is suggested that when such toxic effects are suspected from drugs that only infrequently produce them, comparisons of this sort may be more productive than epidemiological studies. (4 refs.) - *Journal summary.*

University of California
School of Medicine
San Francisco, California 94122

1112 BORÉUS, L. O. Pharmacology of the human fetus; Dose-effect relationships for acetylcholine during ontogenesis. *Biologia Neonatorum*, 11(5/6):328,337, 1967.

Segments of ileum from human fetuses of 12 to 24 weeks gestational age were exposed *in vitro* to graded doses of acetylcholine and the resulting isometric tension measured by means of strain gauge transducers. Cumulative dose-effect curves were determined and found to be stable for several hours. The maximal response that could be obtained increased with the age of the fetus, but the dose of acetylcholine required to produce a given proportion of the maximal effect did not change during fetal growth. The pA_2 values for the antagonists atropine and pethidine were determined and found to be constant in all fetal ages tested. Findings indicate that the function of the acetylcholine receptor is developed early in fetal life and

that its quantitative relation to the specific agonist and antagonists does not change during ontogenesis. (3 refs.) - *Edited journal summary.*

Department of Pediatrics
Karolinska Sjukhuset
Stockholm, Sweden

1113 Lead in drinking water. *Lancet*, 2 (7525):1076-1078, 1967.

Although lead is invariably present in drinking water, the current safeguards in Britain appear to be sufficient to maintain a reasonable degree of safety. It is total lead intake that matters, and the effects of small doses of lead are still not completely known. The World Health Organization International Standards recently set 0.05 ppm as the upper limit of allowable lead concentration. No known statutory water source contains more than 0.05 ppm in Britain. This does not insure that natural water sources or properties with old lead pipes may not have higher concentrations. The plumbosolvency in water can be effectively measured and characteristically is associated with acid moorland waters. Three cases of lead poisoning from lead dissolved from pipes in the home have been reported in humans. The lead concentration is greater when water rests overnight in the pipes. The sole quality requirement for water supplies is based on the Water Act of 1945. This is a flexible system which allows local decisions. This is satisfactory since water authorities are noted for their readiness to investigate complaints and insure the wholesomeness of drinking water. Not every danger has been eliminated, and vigilance regarding the amount of lead in the drinking water should be maintained. (12 refs.) - *R. Froelich.*

1114 Lack of B-complex vitamin threatens mother and fetus. *Medical World News*, 8(51):40, 1967.

Although severe folic acid (FA) deficiency in pregnancy is associated with maternal megaloblastic anemia, the presence of lesser degrees of FA deficiency in 22 percent of 250 pregnant women indicates that this deficiency may be associated with placental abruption, miscarriage, and congenital defects. The demands of pregnancy increase the daily requirement for FA from 50-150 micrograms to 200-800 micrograms. FA and its derivatives are essential in formation of DNA, RNA, and protein; therefore, deficiencies affect rapidly growing fetal and maternal tissues. A simple test based on the appearance of formiminoglutamic acid in the urine following administration of oral histidine is now available for detecting FA deficiency. This test should be run periodically during pregnancy. (No refs.) - *D. Martin.*

Trauma or Physical Agent

1115 ROSVOLD, H. ENGER. Some neuropsychological studies relevant to mental retardation. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 12, p. 167-185.

Research studies conducted in the Section of Neuropsychology in the National Institutes of Mental Health and concerned with identifying brain functions involved in learning indicate that the behavioral manifestations resulting from localized cortical or subcortical brain damage are most likely to occur in the form of specific disabilities. The generalized disability of some MRs may be the result of: generalized damage to many brain structures, damage to 1 structure with a number of diffuse interconnections, or damage to a combination of these. Experiments involving the simultaneous recording of the electrical activity of the brain and performance on the Continuous Performance Test suggest that some types of MR may be caused by dysfunctions in the activation pattern of the brain; these affect alertness and attention abilities and originate in a dysfunction in the lower brain stem. Studies on the effects of early brain damage on later behavior suggest that early retraining may be able to overcome some of the effects of damage. (38 refs.) - *J. K. Wyatt.*

1116 BONIFACE, WILLIAM R. Neurological considerations. In: Bortner, Morton, ed. *Evaluation and Education of Children with Brain Damage*. Springfield, Illinois, Charles C. Thomas, 1968, Chapter 5, 109-127.

The role of the neurologist in the diagnosis of brain damage (BD) is discussed in terms of the complexity of definitions and the criteria employed in this designation. The neurologist may have little information to aid in the evaluation of "minimal brain damage." BD can be delineated when direct study of brain tissue is available, but this does not apply in the majority of cases. Brain biopsy is very difficult and serious, yet it offers relatively small rewards. The primarily anatomic approach has severe limitations in diagnosing behavior for parents, schools, and other professional workers. Although a diagnosis of BD does depend on anatomic demonstration for final support, such evidence is seldom obtained in life; instead, indirect methods, although less reliable, are used. Because diagnosis is formulated on signs alone, the neurologist functions much like a mechanic. By various signs he can check many parts of the central nervous system. However, minimally BD children present no consistently recognizable neurologic abnormality. The neurologist should function as the member of the team who requires that reasonable doubts be dispelled before the diagnosis of "brain damage" is applied. (2 refs.) - *B. Bradley.*

1117 GOMEZ, MANUEL R. Minimal cerebral dysfunction. *Clinical Pediatrics*, 6(10): 589-591, 1967.

The terms, "minimal brain damage" and "minimal cerebral dysfunction" are discussed on the basis of the usefulness and validity of their application in pediatric practice. Questionnaires were sent to 10 pediatricians regarding the definition and application of these terms. The results indicated that only 1 out of 10 felt that the term "minimal cerebral dysfunction" was useful; most respondents felt that this term should be more adequately defined. At present, the term seems to be used to include any minor form of disturbance of cerebral function in a child who is attending school. Evidence of anatomical damage or injuring process often is absent, and disorder of function is the only evidence used for applying the diagnosis of "minimal brain damage." Disturbances of cerebral function can be more appropriately classified as: minor motor disorders, hyperkinetic behavior, disorders of communication, dominance problems, perceptual disorders, MR, or convulsive disorders. (2 refs.) - *B. Bradley.*

Mayo Clinic
Rochester, Minnesota 55901

1118 CHRISTENSEN, ERNA, & MELCHIOR, JOHANNES C. *Cerebral Palsy: A Clinical and Neuropathological Study*. (Clinics in Developmental Medicine No. 25). London, England, William Heinemann Medical Books Ltd., 1967, 134 p. ($4.00).

Clinical and pathological findings are related to etiological and pathogenic factors in brain autopsies of 69 cerebral palsied patients. In the Ss with pure tetraplegia, the lesions were cortical; but when the condition included rigidity, the basal ganglia were involved as well. Lesions tended to follow perinatal anoxia and were severe and widespread. Most Ss had epileptic seizures, MR, and microcephaly. The pure spastic hemiplegics had either a tumor or maldevelopment of 1 hemisphere; when the condition included rigidity, both hemispheres were involved. Varied etiology was found in the paraplegic and diplegic group. Most athetoids had had kernicterus with most damage localized to the basal ganglia. No pure ataxia cases were found. Epilepsy occurred in 60 percent of the patients. When perinatal damage occurred, the Ss' symptoms started at birth, whereas when maldevelopment was present, the Ss frequently appeared normal during the first few months. Patients with perinatal damage either died within the first 5 years or survived until adulthood, while dysplasia patients died anytime during childhood. (220 refs.) - *C. A. Pepper.*

1119 GRIFFITHS, MARGARET. Cerebral palsy in multiple pregnancy. *Developmental Medicine and Child Neurology*, 9(6):713-731, 1967.

Congenital cerebral palsy was confirmed in 1 or more members of 78 twin pregnancies which resulted in 58 normal co-twins, 82 cases of cerebral palsy, and 16 neonatal deaths or stillbirths. Seven cases of cerebral palsy in 4 sets of triplets and 6 cases of acquired cerebral palsy also are discussed. There was

a higher than normal proportion (43 percent) of like-sexed twins in the series and an even higher proportion (80 percent) among twin pairs with non-survivors. The incidence of immaturity was 85 percent, but this did not apppear to be the only factor. There was a difference between the type and probable cause of the cerebral palsy as it affected first and second-born twins. The first-born twins were more often premature infants, presenting by the vertex, and the commonest form of cerebral palsy was spastic diplegia. The second-born twins were often mature, showed abnormalities of presentation or symptoms of anoxia, and usually presented a more severe type of cerebral palsy, often spastic tetraplegia or severe athetosis. There were more normal survivors and more neonatal deaths among the second born twins, and the 'risk' score by number of insults was higher. This difference of manifestation and causation of cerebral palsy in first-born and second-born twins may help to determine the etiology of cerebral palsy, particularly of spastic diplegia, which appears to be a separate condition rather than a milder type of spastic tetraplegia. (47 refs.) - *Edited journal abstract.*

Institute of Child Health
University of Birmingham
The Nuffield Building
Francis Road, Birmingham 16
England

1120 PERLSTEIN, MEYER A., & HOOD, PHILIP N. Seasonal variation in congenital cerebral palsy. *Developmental Medicine and Child Neurology*, 9(6):673-691, 1967.

'Normal' controls consisting of full-term, premature, and stillborn infants were compared with 3,942 congenital cerebral palsy patients whose date of birth was known. In the control population, most births occurred in the fall and summer. There was a continuum with shifting of the preponderance of births towards summer and spring, with decreasing birthweight. An exception to this rule was the preponderance of full-term stillborn in the late winter and spring. The cerebral palsied population did not differ significantly in seasonal distribution from the normal population, except that the full-term cerebral palsied tended to approach the seasonal distribution of control prematures. The spastic quadriplegias deviate markedly from normal expectancy with an exaggerated increase of births in summer. The Rh athetoids also show a marked deviation from normal expectancy, with exaggerated prevalence of births in summer and fall. There is no significant distributional difference for the various causes except for the Rh factor and anoxia. These distributions are better understood by postulating 3 premises: spring is the period of greatest fetal vulnerability; the more severe the fetal damage, the sooner the fetal extrusion; and the later in gestation the fetal damage, the sooner the fetal extrusion. These premises would explain the continuum of shifting preponderance from fall to spring in various abnormal categories. They also would indicate that spastic quadriplegia is primarily due to prenatal rather than to natal causes and that anti-Rh titers are more likely to rise rapidly in spring than in any other season. (83 refs.) - *Edited journal summary.*

Cook County Hospital
1825 West Harrison Street,
Zone 12
Chicago, Illinois

1121 CARVALHO, ORESTE. A respiratory function test for use in spastic cerebral palsy. *Developmental Medicine and Child Neurology*, 10(1):98-100, 1968.

When compared in relation to height, weight, and age, the "crying vital capacity" of 13 spastic cerebral palsied children aged 10 to 34 months was significantly lower than that of 205 normal children under 3 years of age. The respiratory function was measured by placing a face mask over the nose and mouth of a crying infant at the end of inspiration and noting the volume of air expired. The crying vital capacity is the maximum of several readings. (2 refs.) - *A. Huffer.*

Rua Santa Clara 115-305
Rio de Janeiro, Brazil

1122 KNOX, DAVID L., CLARK, DAVID B., & SCHUSTER, FRANK F. Benign VI nerve palsies in children. *Pediatrics*, 40(4, part 1):560-564, 1967.

The palsy disappeared within 10 weeks of onset in all but 1 of the 12 children who had developed a sixth cranial nerve palsy 7 to 20 days after fever or upper respiratory illness. Their ages ranged from 1½ to 15 years;

sex was not an important variable. Two children had recently had otitis media, while 2 had had no preceding illness. None had pain at the time of onset of the palsy. The right VI nerve was involved in 9 patients. One patient also had left conjugate gaze weakness, which may represent an early episode of multiple sclerosis. One patient was found to have a hemangioma at the apex of the involved orbit. Lymphocytosis was found in 5 patients, and none had papilledema. The one patient who had not recovered by 10 weeks required 9 months for final resolution. Possible etiologic mechanisms include a relationship to otitis media such as a painless Gradenigo's syndrome or a relationship to a systemic viral infection with a resulting neuritis. There is some evidence supporting both mechanisms. The most important conclusion from this series of cases is that a VI nerve palsy can be a relatively benign process despite its malignant implications. Knowledge of this syndrome may prevent unnecessary diagnostic studies. (6 refs.) - *R. Froelich.*

Wilmer Ophthalmological Institute
The Johns Hopkins Hospital
Baltimore, Maryland 21205

1123 CHAVINIE, J., & MICHELON, B. Données actuelles sur la souffrance foetale: Methodes récentes de diagnostic et de traitement. (Actual data on the distressed fetus: Recent methods of diagnosis and treatment.) *France Medicale*, 30(5):205-216, 1967.

Fetal anoxia, which may lead to morbidity and mortality, often can be prevented by using recently developed methods of diagnosis and treatment. Ss needing close supervision for fetal distress include those with prolonged pregnancy, toxemia, nephropath, diabetes, hemolytic disease, and intrauterine death during previous pregnancies. Diagnostic methods currently available include determination of blood pH, placental perfusion studies with isotopes, placental biopsy, study of urine estriols and plasma steroids, amniocentesis for meconium and bilirubin determination, and fetal EKG. Amnioscopy is preferred because it has a low in utero mortality rate and is simple and innocuous. If fetal anoxia is present, interruption of the pregnancy by induced labor or cesarean section will result in a decrease in perinatal morbidity and mortality. (No refs.) - *W. Asher.*

No address

1124 MASMYUKOVA, E. M. Osobennosti psikhicheskogo razvitiya detei perenesshchikh asfiksiyu pri rozhdenii. (Peculiar mental development in children suffering birth anoxia.) *Zhurnal Nevropatologii i Psikhiatrii*, 67(1):1552-1556, 1967.

Examination of 130 children (CA 1 to 14) suffering from birth anoxia revealed that 47.5 percent were normal, 35.5 percent were developmentally retarded and had neuropsychiatric problems, and 17 percent had severe organic involvement. The small percentage of those with organic involvement is attributed to the fact that none with birth injury, unfavorable heredity, or prematurity were included. The neuropsychiatric dynamics of each group are discussed. The results permit conclusions with regard to the importance of the duration of the anoxia, its final state, and the possible re-establishment of vital functions. Other criteria are needed in order to establish ways to alleviate the effects of anoxia in the newborn. (7 refs.) - *C. A. Pepper.*

No address

1125 STAVE, U. Age-dependent changes of metabolism: III. The effect of prolonged hypoxia upon tissue enzyme activities of newborn and adult rabbits. *Biologia Neonatorum*, 11(5/6):310-327, 1967.

A group of 8 enzymes was determined in the liver, kidney, skeletal muscle, and cardiac muscle of newborn rabbits previously exposed for 12 to 24 hours to a gas mixture of 6.5 percent oxygen with 5 percent CO_2 and nitrogen. These results were evaluated by comparing enzyme activities of hypoxia treated newborns with those of controls of the same ages. In addition, adult rabbits were treated with hypoxia (8 percent O_2) for the same periods of time, and the changes of tissue enzyme activities were compared with those of the newborns. The enzyme pattern consisted of hexokinase, 3 enzymes of the Embden-Meyerhof pathway, 2 enzymes of the tricarboxylic acid cycle and 2 related enzymes. After 12 hours of hypoxia, the enzymes of the Embden-Meyerhof pathway were increased in newborns and rather unchanged in adults, but after 24 hours of hypoxia, these enzymes returned to the level of the controls in newborns and were significantly elevated in adults. The enzyme activities of the tricarboxylic acid cycle and related reactions were low throughout the duration of hypoxia in

both age groups. Investigation of the response of tissue enzyme activities of newborns in relation to developmental changes in the immediate postnatal period suggests that a general reduction of metabolic processes is the most important mechanism employed by the newborn for survival of prolonged severe hypoxia. (46 refs.) - *Edited journal summary.*

Fels Research Institute
Yellow Springs, Ohio 45387

1126 MAJNO, GUIDO, AMES, ADELBERT, III, CHIANG, J., & WRIGHT, R. LEWIS. No reflow after cerebral ischaemia. *Lancet*, 2(7515):569-570, 1967. (Letter)

A concept of no reflow phenomenon arose from study of rabbit brains made ischemic for periods of 2½ minutes to 15 minutes. Enlargement of the perivascular astrocytes leads to narrowing of the capillary lumina and concentration of macromolecules and formed elements in the blood. Consequent impaired flow through the microvasculature may prove indirectly lethal to the parenchymal cells and, when the brain is involved, to the individual. (11 refs.) - *J. Snodgrass.*

Massachusetts General Hospital
Boston, Massachusetts

1127 HODGKINSON, C. PAUL, HODARI, A. ALBERTO, & BUMPUS, F. MERLIN. Experimental hypertensive disease of pregnancy. *Obstetrics and Gynecology*, 30(3):371-380, 1967.

Producing experimental chronic uterine ischemia in pregnant dogs caused a syndrome of progressive hypertension and proteinuria very similar to human hypertensive disease of pregnancy. Hard Teflon bands were placed on the uterine and utero-ovarian arteries so that no ischemia occurred during a non-pregnant state but it did occur when metabolic demands of the uterus increased during pregnancy. Twenty dogs were followed throughout pregnancy; 11 dogs became pregnant but did not maintain pregnancy to term. Sixty dogs, 25 of which were pregnant, were used as controls. The blood pressure in non-banded dogs was stable, with variations less than 15 percent. The blood pressure of the banded pregnant dogs pregressively increased during pregnancy, with a 50 percent increase during the last week of pregnancy. Proteinuria occurred in 90 percent of banded pregnant dogs, compared to 8 percent for the non-banded pregnant animals. The banded pregnant dogs also had hypernatremia and increased urinary excretion of aldosterone. The concentration of renin in the kidneys of fetuses from banded hypertensive dogs was markedly increased (28-fold) over levels in fetal kidneys from normotensive animals. High renin values were obtained from uterine vein blood, and renin was found to freely pass across the placenta. The experiment resembled the Goldblatt kidney experiment; it is possible that the fetal kidney is the source of maternal hypertension. (26 refs.) - *R. Froelich.*

Henry Ford Hospital
Detroit, Michigan 48202

1128 MILLER, ROBERT W. Effects of ionizing radiation from the atomic bomb on Japanese children. *Pediatrics*, 41(1)257-263; discussion, 263-270, 1968.

Effects of radiation exposure from the atomic bomb during childhood, intrauterine life, or before conception were studied in Japanese children in Hiroshima and Nagasaki. Some 71,280 pregnancies and 2,400 children (ages 0-13 yrs at the time of exposure) were studied. Fetal and infant mortality which was highest in those near the hypocenter, increased markedly if signs of radiation injury were evident in the mother. Anthropometric determinations revealed a small decrease in body measurement and post pubertal growth rate in exposed children. A high incidence of acute leukemia was found in children who had been within 1,500 meters of the hypocenter. Radiation cataracts did not occur in children, but visual acuity was reduced in exposed Ss. Microcephaly and MR were more frequent in infants of pregnant Ss with signs of radiation injury. Decreased leukocyte response to infection after exposure is suspected, but not documented. Overall childhood mortality excluding leukemia was not increased. The most prevalent late effect of atomic radiation appears to be fear of late effects. (30 refs.) - *W. A. Hammill.*

National Cancer Institute
National Institute of Health
Bethesda, Maryland

1129 RUSSELL, WILLIAM L. Radioactivity in the individual: Recent studies on the genetic effects of radiation in mice. *Pediatrics*, 41(1):223-227; discussion, 228-230, 1968.

Radiation exposure at small dose rates or in small doses produced fewer genetic abnormalities in mice than the same total dose given continuously at higher dose rates. Mutation frequency of spermatogonia decreased progressively when the dose rate was reduced from 90 r/min to 8 r/min, but reduction to .009 r or .001 r/min had no further effect on mutation frequency. Oocytes showed progressive reduction to .009 r/min. Increasing the dose rate above 90 r/min had no increased mutation effect. In females, the lower mutation frequency early in the mating period indicates less mutation sensitivity in the young follicles. Rats exposed to small intermittent doses at high dose rates (50 r at 90 r/min for a total of 400 r) had fewer mutations than those exposed to 400 r at 90 r/min continuously. If exposed to small doses or low dose rates, the cells may be able to repair the genetic damage done by radiation. Humans may have a wider margin of safety from exposure to small amounts of radiation than was predicted previously from large dose data. (12 refs.) - *W. A. Hammill.*

Oak Ridge National
Laboratory
Oak Ridge, Tennessee 37830

1130 MAXWELL, BRIAN E. Neonatal cold injury in the northwest territories. *Canadian Medical Association Journal*, 97(16):970-973, 1967.

An Eskimo newborn infant who suffered extreme cold injury is presented as an example of a common cause of neonatal death in this population. The infant was the product of a prolonged delivery. The physician was called by radio but did not arrive to begin treatment until the infant was 8 hours old. The delivery had taken place in a tent with the inside temperature about 32° F. Because the infant had not demonstrated sucking to the parents, they had assumed he was not a "good" baby and had left him uncovered to die. The infant was stiff, areflexic, and comatose. His lowest body temperature was estimated at 69° F. He was treated conservatively and was fully recovered by 17 days of age. At 9 months of age he appeared healthy in all respects. Since the syndrome of neonatal cold injury may be insidious and undramatic, it may be more common than now recognized. Cold injury has been held as possibly responsible for the development of cretinism, MR, epilepsy, and cerebral palsy. Since the rate of neonatal deaths among the Canadian Eskimos is 3½ times the national average, cold injury may be the primary cause of neonatal death in this population. (12 refs.) - *R. Froelich.*

372 St. Germain Avenue
Toronto 12, Ontario, Canada

1131 DUMARS, K. W., JR. The adopted child and congenital malformations. *Clinical Pediatrics*, 6(12):696-698, 1967.

Of 168 consecutive unselected infants who were living in foster homes, 33 had congenital malformations. All but 8 were Caucasian, and only 4 had weighed less than 2,500 gm at birth. The ages of 31 of the known mothers ranged from 15 to 41 years. The parity of 59 mothers consisted of first pregnancy (28), second pregnancy (10), and 3 or more pregnancies for 21. The length of stay in a foster home varied from several weeks to 2 years. Of the 33 with congenital malformations, 19 were of a major nature: microcephaly, hydrocephaly, MR, *cri du chat* syndrome, hydronephrosis, spastic hemiparesis, malabsorption syndrome, convulsive disorder, ventricular septal defect, sickle cell disease, partial premature synostosis, megalocornea, left-sided facial growth arrest, macrocephaly, and ambiguous genitalia. MR was part of the clinical picture in 4 children. Six infants were tested for chromosomal karyotypes and the child with *cri du chat* syndrome proved to have the B deletion. In addition to the 33 with congenital malformations, 3 infants were found to have developmental retardation. Some possible explantions for the high incidence of disorders in this group include the statistical methodology used in the study, suboptimal pregnancy care for women pregnant out of wedlock and effects of unsuccessfully induced abortion. (13 refs.) - *R. Froelich.*

California College of Medicine
1721 Griffin Avenue
Los Angeles, California 90031

1132 BROWNE, DENIS. A mechanistic interpretation of certain malformations. In: Woollam, D. H. M., ed. *Advances in Teratology: Volume Two*. New York, New York, Academic Press, 1967, Chapter 1, p. 11-36.

Despite many instances of the animal body being structurally altered by outside stress, intra-uterine (IU) life has rarely been

311-967 O - 68 - 3

studied from this viewpoint. The existence of deformities of the fetus produced by surrounding stress is either dogmatically denied or ignored. Normally the fetus is exposed to stresses due to: (1) IU posture, (2) IU spatial pressure, and (3) IU hydrostatic pressure. A mechanistic interpretation of malformations can be based on 4 hypotheses stemming from changes in the normal. First, malposition due to either lack of space or an abnormal amount of space and a resulting improper arrangement of the fetus can manifest as total varus, metatarsal varus, breech position, and scoliosis. Second, increased spatial pressure due to small fetal surroundings will be responsible for effects on the "bent-knee triangle" (the isosceles triangle formed by the pelvis as base, knees as apices, and hips and feet the other angles), the spina-bifida-hycrocephalus-talipes syndrome, birth pressure necrosis of the skin, congenital fracture of the tibia with the absence of the fibula, torticollis secondary to a shortened sterno-mastoid muscle, and compression feet mental deficiency syndrome. Third, increased hydrostatic pressure and resultant hydramnios would allow malposition and interference with circulation, especially of the limbs. Fourth, membranous perforation by the fetus would lead to malformations due to the membrane's acting as an unyielding band around a growing fetus. An understanding of mechanistic factors as one of a vast group of factors causing deformities will aid in their interpretation and treatment. (30 refs.) - *A. C. Molnar.*

Disease or Disorders of Metabolism, Growth, or Nutrition

1133 GELLER, HERMAN M., CHANEY, ROBERT H., & EYMAN, RICHARD K. Liver function and serum protein studies on mentally retarded individuals. *American Journal of Mental Deficiency*, 72(4):554-561, 1968.

This study was undertaken because of the presence of abnormal "liver function tests" in a significant number of MR patients who had been a "control group" in an investigation of hepatitis at Pacific State Hospital. It was concerned with determining the relationship of such tests to institutionalization or to biochemical abnormalities inherent in retarded individuals. The information obtained suggests that: (1) abnormal readings on blood chemistry tests commonly used as "liver function tests" are more frequent among the MR and (2) that a higher frequency of abnormal readings, as well as an increase in the abnormality of given tests, are more likely to occur as the length of institutionalization increases. (11 refs.) - *Journal abstract.*

Pacific State Hospital
Box 100
Pomona, California 91766

1134 LEVI, A. J., *SHERLOCK, SHEILA, SCHEUER, P. J., & CUMINGS, J. N. Presymptomatic Wilson's disease. *Lancet*, 2(7516):575-579, 1967.

Seventeen children from 5 families having members with Wilson's disease were extensively studied; 7 had clinical Wilson's disease and 5 had presymptomatic Wilson's disease. It is very important to detect presymptomatic Wilson's disease because adequate chelation treatment can prevent the severe consequences of the disease. Of those with symptomatic Wilson's disease, all had liver signs, 5 had Kayser-Fleischer rings, and 5 had increased serum bilirubin. Three of the children with asymptomatic Wilson's disease had liver signs and none had Kayser-Fleischer rings. The 5 presymptomatic children and 3 heterozygotes had low serum-copper and serum ceruloplasmin. The diagnosis of presymptomatic Wilson's disease is indicated by a liver-copper concentration over 25 mg/100 gm dry weight from liver needle-biopsies. The liver histology was not diagnostic of Wilson's disease. The liver-thigh ratio 2 hours after injection of copper-64 could not differentiate presymptomatic homozygotes from heterozygotes. Neurological symptoms occurred in a 20-year-old who survived and is improving but did not occur in the 5 that died. Frequent symptoms in the symptomatic group were abdominal pain, jaundice, ascites and anemia. Screening for Wilson's disease should be done in all siblings of a proven case. (12 refs.) - *R. Froelich.*

*Royal Free Hospital
Medical School
London W. C. 1, England

1135 WALSHE, J. M. Effect of penicillamine on failure of renal acidification in Wilson's disease. *Lancet*, 1(7546):775-779, 1968.

The ability of the kidney to secrete an acid urine and to form ammonia after an ammonium-chloride load has been investigated in 20 patients with Wilson's disease. Ten of these patients (group 1) had received little or no treatment at the time they were first tested, only 2 could reduce their urinary pH below 6.22, and the mean figure for the minimum pH recorded for the group was 6.41 (±0.21). There was a corresponding inability to form ammonia. After 1 or more years of treatment with D-penicillamine hydrochloride all patients showed improvement so that the mean minimum pH fell to 5.22 (±0.20), the difference being statistically highly significant. Ten further patients (group 2) were tested for the first time from 1 to 10 years after the start of treatment, the findings corresponded closely with those for the patients in group 1 after they had received treatment, the mean minimum pH being 5.21 (±0.17). This restitution of renal function correlated well with evidence for decrease in the body stores of copper and with improvement in the neurological and hepatic signs of the disease. (24 refs.) - *Journal abstract.*

University of Cambridge
Cambridge, England

1136 GERHARD, J. P. Étude du cuivre de l'humeur aqueuse chez une famille atteinte de maladie de Wilson. (A study of copper of the aqueous humor in a family suffering from Wilson's disease. *Ophthalmologica*, 154(4):405-408, discussion, 408-410, 1967.

Analysis of the level of copper (Cu) within the ocular aqueous humor (AH) of persons susceptible to Wilson's disease (WD) offers a way of detecting the disease early so that preventive treatment, primarily with penicillamine, can be instituted and severe hepatic, neurological, and psychiatric complications avoided. While the physical and biochemical abnormalities are evident in known cases of WD, they are variable and inconstant in early and latent cases. Colorimetric and atomic absorption lamp techniques have shown that the level of Cu in the AH is slightly greater than 12 μgm/100 gm of AH. When these techniques were applied to the AH of 3 known cases of WD, it was found that the Cu level was greatly elevated. Examination of the relatives of 1 case showed that the father and a brother had elevated Cu in the AH without neurological signs. Furthermore, the former had advanced cirrhosis and the latter had micropigmentation of the cornea and cortical degeneration at brain biopsy. While the other siblings and the mother were normal, a cousin had been hospitalized with WD and the paternal grandmother probably died as a result of the disease. From this it would appear that the disease is transmitted directly, rather than in an autosomal recessive manner. While the analytic method of detecting the Cu level is intricate, nevertheless, it can be done by qualified technicians. Furthermore, treatment with penicillamine definitely appears to be of palliative and beneficial value in affected patients, but observation for renal and hematological side effects must be instituted. (No refs.) - *E. Gaer.*

Strasbourg University
Strasbourg, France

1137 SCHMIDT. F. W. Enzymes in diagnosis of liver disease. *Proceedings of the Royal Society of Medicine*, 60(12):1247, 1967.

Determination of enzymes in serum aids in the diagnosis of liver disease. The diagnosis requires exact assay methods, critical assessment of normal enzyme values, and an evaluation of the relationship of several enzymes in the serum. Selection of enzymes to be evaluated should be based on their intracellular localization or different functional importance. (No refs.) - *J. Snodgrass.*

The Medical School
Hanover, Germany

1138 CAPLINGER, KELSY J., & BOELLNER, SAMUEL W. Primary acquired lactase deficiency with acquired hypogammaglobulinemia. *American Journal of Diseases of Children*, 115(3):377-387, 1968.

A 7-year-old MR S first developed symptoms of lactase deficiency at age 3½ years following normal development until age 2½. Frequent infections (upper respiratory, otitis, renal) began at age 4½. Breast feeding and milk were well tolerated until age 3. A 14-month-old brother died of pneumonia following several months of diarrhea. Both parents and a sister are normal. The Ss' total serum globulins were normal, but immunoglobulins were

reduced. At age 4 years 8 months, Vineland Social Maturity index was 2½ years. Oral lactose tolerance test was abnormal. Small bowel mucosal biopsy tissue had lactase activity of 1.4 and 6.1 units (normal, 16-18 units). As a result of therapy with parenteral gamma globulin and lactose-free diet, diarrhea stopped and the S gained weight, had fewer infections, and became much more active. Signs of mild MR persisted; however, no other cases of the combination of hypogammaglobulinemia and primary acquired lactase deficiency have been reported. (83 refs.) - *W. A. Hammill.*

4301 West Markham Street
Little Rock, Arkansas 72201

1139 MIGEON, BARBARA R., DER KALOUSTIAN, VAZKEN M., NYHAN, WILLIAM L., YOUNG, WILLIAM J., & CHILDS, BARTON. X-linked hypoxanthine-guanine phophoribosyl transferase deficiency: Heterozygote has two clonal populations. *Science*, 160(3826):425-427, 1968.

Clones of skin fibroblasts cultured from the mother of 2 sons with X-linked hypoxanthine-guanine phosphoribosyl transferase deficiency (Lesch-Nyhan syndrome) were assayed for activity of this enzyme by measurement of the incorporation of ^{3}H-guanine into guanylic acid as counts per minute per microgram of protein and by autoradiography. The demonstration of 2 populations of clones, wild-type clones with normal enzyme activity and mutant clones unable to incorporate ^{3}H-guanine, is evidence that the locus for hypoxanthine-guanine phosphoribosyl transferase on 1 of the X chromosomes is inactive. (13 refs.) - *Journal abstract.*

Johns Hopkins University
School of Medicine
Baltimore, Maryland 21205

1140 SCRIVER, C. R., SILVERBERG, M., & CLOW, C. L. Hereditary tyrosinemia and tyrosyluria: Clinical report of four patients (symposium). *Canadian Medical Association Journal*, 97(18):1047-1050; discussion, 1050, 1967.

Four patients with abnormal tyrosinemia and marked tyrosyluria are described and a fifth patient with a similar diagnosis is mentioned in addendum. They were of French-Canadian ancestry and ranged in age at the time of diagnosis from 2 to 32 months. Clinical features included failure to thrive in 5, vomiting in 2, jaundice in 1, hepatomegaly in 5, ascites in 3, unusual odor in 3, irritability in 3, opisthotonus in 2, bruising in 2, hypoglycemia in 4, rickets in 1, and Fanconi syndrome in 2. Two presented with chronic liver disease. Two have died and 3 have responded favorably to a low tyrosine-low phenylalanine diet. Biochemical features of these infants included an increased plasma tyrosine in 5, marked tyrosyluria in 5, increased plasma methionine in 3, positive cephalin flocculation test in 3, abnormal bromsulphalin (BSP) retention in 3, and increased PO_4 clearance in 3. Plasma phenylalanine was increased in 3. The infant discussed in addendum responded dramatically to dietary treatment and at 6 months of age appears normal and has no evidence of hepatic failure. From this experience, it appears that the earliest possible detection and treatment of this disorder would provide the maximum benefit. (5 refs refs.) - *R. Froelich.*

De Belle Laboratory for
Biochemical Genetics
The McGill University
Montreal, Quebec, Canada

1141 LAROCHELLE, J., MORTEZAI, A., BELANGER, M., TREMBLAY, M., CLAVEAU, J. C., & AUBIN, G. Experience with 37 infants with tyrosinemia (symposium). *Canadian Medical Association Journal*, 97(18):1051-1054, 1967.

The clinical features of 37 infants with tyrosinemia, most of whom died the same month the disease was discovered, included (in the order of frequency) hepatomegaly, temperature, edema, vomiting, peculiar odor, melena, ascites, splenomegaly, hematuria, diarrhea, jaundice, ecchymosis, and epistaxis. The infants were from the Saguenay-Lake St. John region of Quebec. They were products of full-term, normal pregnancies and were from 26 families. The age of onset of symptoms varied from 1 to 7 months. The peculiar odor of 51.3 percent occurred after micturition and was caused by the presence of methionine. Laboratory findings included hypoglycemia in 19 infants and anemia and hyperleukocytosis in all infants. Serum phenylalanine, tyrosine, and methionine were elevated 5 to 10 times above normal. Massive aminoaciduria was present in 13 infants tested. Blood ammonia was always increased. They had advanced or progressive cirrhosis and a complex renal

tubular defect. A deficiency of p-hydroxyphenylpyruvic acid oxidase in the hepatic parenchyma was confirmed in 4 patients. Two patients treated by a low tyrosine diet showed metabolic improvement but both have died, 1 of bulbar encephalitis and 1 of hepatic insufficiency. (1 ref.) - *R. Froelich.*

Department of Pediatrics
Hôtel-Dieu St-Vallier
Chicoutimi, Quebec, Canada

1142 PRIVÉ, L. Pathological findings in patients with tyrosinemia (symposium). *Canadian Medical Association Journal*, 97(18): 1054-1055; discussion, 1055-1056, 1967.

Pathological study of 29 infants with tyrosinemia revealed, primarily, abnormalities in the liver and kidney. Complete post-mortem examination was made in 25 cases and liver biopsies in 4 cases. Grossly, the liver was moderately enlarged, yellowish, firm, and faintly nodular. The kidneys were enlarged, pale, soft, and edematous. Microscopically, the liver was fibrotic with distorted lobules and a diffuse inflammatory infiltrate composed of lymphocytes and monocytes. Many liver cells were pyknotic and degenerated with numerous fatty vacuoles. Early nodular regeneration and bile stasis were present. Kidney abnormalities included interstitial edema, tubular dilation, epithelial vacuoles and granular degeneration, granular casts, and calcium deposits. These infants seemed to have more acute liver damage than other cases described in the literature. Hyperplasia of the islets of Langerhans was found in over 50 percent of the infants. Other findings included generalized edema and signs of diffuse hemorrhage. (No refs.) - *R. Froelich.*

Department of Pathology
Hôtel-Dieu St-Vallier
Chicoutimi, Quebec, Canada

1143 SASS-KORTSAK, A., FICICI, S., PAUNIER, L., KOOH, S. W., FRASER, D., & JACKSON, S. H. Clinical and biochemical study of three patients with tyrosyluria (symposium). *Canadian Medical Association Journal*, 97(18): 1056-1058, 1967.

Three infants who exhibited failure to thrive between 3 and 5 months of age revealed clinical and biochemical manifestations of tyrosyluria. Two were male and 2 had 1 affected sibling. The pregnancy, delivery, and newborn periods were normal. All had progressive cirrhosis, a renal tubular defect, and hypoglycemia. Other manifestations included rickets in 2, hemolytic anemia in 2, and a possible mental defect in 1. All 3 died between 9 months and 4 years of age. The S who lived the longest had a slight lag in intellectual development and died of a malignant hepatoma. One died of *E. coli* sepsis and the other died of liver failure. The diagnosis was based on changes in plasma amino acids and urinary excretion of phenolic and amino acids. Plasma tyrosine varied between .010 and .564 μmoles/ml, and plasma methionine varied between .005 and .682 μmoles/ml. One infant had massive generalized aminoaciduria. Increased excretion of threonine, serine, glycine, alanine, valine, methionine, tyrosine, phenylalanine, and histidine was noted in the other 2 infants. Renal tubular reabsorption of amino acids was markedly defective in 1 S and slightly defective in another. The marked aminoaciduria in all the infants, however, suggested an abnormally reduced maximal renal reabsorptive capacity. Urinary phenolic acid excretion was markedly increased in all Ss. Since enzymatic study of liver biopsy specimens was unsatisfactory, the diagnosis of tyrosyluria is not proven conclusively. (4 refs.) - *R. Froelich.*

The Research Institute
The Hospital for Sick
Children
Toronto, Ontario, Canada

1144 PARTINGTON, M. W., & HAUST, M. D. A patient with tyrosinemia and hypermethioninemia (symposium). *Canadian Medical Association Journal*, 97(18):1059-1067; discussion, 1067, 1967.

A 6½-month-old male infant with tyrosinemia and hypermethioninemia was evaluated first at 5 months of age and found to be thin, apathetic, hypotonic, and developmentally retarded. He had a plasma tyrosine level of 20.4 mg/100 ml and a plasma phenylalanine level of 2.3 mg/100 ml. His condition deteriorated with jaundice, anemia, and signs of liver disease and hemolysis. It was postulated that the increased protein intake from forced feedings was leading to toxic levels of amino acids. Decreasing his protein intake promptly curtailed the hemolytic process and jaundice. Administration of a diet low in tyrosine and methionine resulted in some

improvement such as more alert behavior. However, he did not gain weight and the low protein diet was again instituted. A tyrosine load test was normal. After 6 weeks of a low protein diet, a return to normal feedings resulted in some weight gain but an irritable mental status. He suddenly died of pneumonia. A number of abnormalities were found at autopsy including hepatic cirrhosis, islet-cell hyperplasia, and calcification of renal tubules and glomeruli. This infant's disorder can be included in the group of diseases called hereditary tyrosinemia, tyrosinosis, or familial cirrhosis and should not yet be considered a primary p-hydroxy-phenylpyruvic acid oxidase deficiency. (8 refs.) - *R. Froelich.*

Department of Pediatrics
Kingston General Hospital
Kingston, Ontario, Canada

1145 PERRY, THOMAS L. Tyrosinemia associated with hypermethioninemia and islet cell hyperplasia (symposium). *Canadian Medical Association Journal*, 97(18):1067-1072, 1967.

Three siblings who died in early infancy with probable tyrosinemia had a peculiar cabbage-like odor, hypoglycemia, and hypertrophy of the islets of Langerhans; 1 infant also had a defect in methionine metabolism. Each S was normal at birth but became symptomatic (markedly irritable followed by somnolence and opisthotonos) between 2 and 8 weeks of age. All had a bleeding tendency, gastrointestinal bleeding, epistaxis, frequent petechiae and ecchymoses, liver enlargement, and abdominal swelling. Their odor was similar to that of commercial methionine. Autopsy findings, which were similar in the 3 infants, included liver cirrhosis, hypertrophy of the islets of Langerhans, and renal tubular dilatation. One infant, tested for biochemical abnormalities, had gross aminoaciduria including tyrosine and methionine. His urine had the alpha-keto acid of tyrosine and methionine and p-hydroxyphenyllactic acid. It is improbable that the disease called tyrosinemia is simply an error in tyrosine metabolism such as a genetically determined failure of p-hydroxyphenylpyruvic acid oxidase. The variations in these 3 infants support this view. (12 refs.) - *R. Froelich.*

Department of Pharmacology
University of British Columbia
Vancouver, British Columbia, Canada

1146 SCRIVER, CHARLES R. The phenotypic manifestations of hereditary tyrosinemia and tyrosyluria: A hypothesis (symposium). *Canadian Medical Association Journal*, 97(18):1073-1075, 1967.

A hypothesis explaining the correlation of the various phenotypic manifestations of hereditary tyrosinemia and tyrosyluria is presented as a basis for discussion. The clinical, biochemical, and enzymatic phenotypes are considered. It is assumed that the primary phenotype is as yet an unspecified abnormality of p-hydroxyphenylpyruvic acid apooxidase (p-HPPA oxidase), with the attendant abnormalities making the secondary phenotype. Since approximately half of the phenylalanine and tyrosine residues have to be oxidized, the inactivity of p-HPPA oxidase in the liver causes the tyrosyluria. The keto-acid (p-HPPA) saturates the renal secretion mechanism, accumulates, stimulates reversible transamination and thus causes hypertyrosinemia. From this basis it follows that the clinically normal infant with this disorder will develop the tertiary phenotype when tyrosine and its derivatives accumulate. This would include the hepatic and renal failure that occurs in this syndrome. The methioninemia that frequently occurs is probably a tertiary manifestation secondary to the liver damage. Other clinical phenotypes that are a tertiary manifestation include "Barber's syndrome;" renal tubular dysfunction associated with hyperaminoaciduria, glucosuria, and phosphaturia; and the Fanconi syndrome. The importance of this discussion depends on the treatment possibilities it may provide. (65 refs.) - *R. Froelich.*

McGill University
Montreal Children's
Hospital Research Institute
Montreal, Quebec, Canada

1147 SCRIVER, C. R., & DAVIES, E. Investigation *in vivo* of the biochemical defect in hereditary tyrosinemia and tyrosyluria (symposium). *Canadian Medical Association Journal*, 97(18):1076-1078, 1967.

In vivo biochemical investigation of patients with hereditary tyrosinemia and tyrosyluria documented deficient oxidation of p-hydroxyphenylpyruvic acid (p-HPPA) and implied permanent impairment of p-HPPA oxidase activity.

Tyrosyluria was identified in 4 untreated patients by means of the Benedict, 2,4-dinitrophenylhydrazine, ferric chloride, Millon, and 1-nitrosonaphthol tests. All tests were positive. Identification of tyrosine derivatives showed that tyrosine accounted for only a small fraction of the total tyrosyluria. Lactic and acetic acid derivatives and p-HPPA accounted for most of the tyrosyluria. Attempts at reversible inhibition with ascorbic acid, folic acid, and hydrocortisone had no effect on the abnormal tyrosyluria or tyrosinemia. An L-tyrosine load produced greater tyrosinemia and tyrosyluria in 2 patients but not in a normal control. A similar L-tyrosine load following 6 months on dietary therapy produced similar results. The augmented tyrosyluria was partially suppressed by oral neomycin. Loading with p-HPPA augmented the tyrosinemia and tyrosyluria in the patients but not in the control. An L-phenylalanine load after 6 months on dietary therapy produced a normal plasma phenylalanine response and a strong tyrosinemia and tyrosyluria response. Restriction of phenylalanine and tyrosine to about 1/4 the normal daily intake eliminated the abnormal tyrosine and tyrosyluria in 4 patients. (4 refs.) - *R. Froelich.*

McGill University
Montreal Children's Hospital
Research Institute
Montreal, Quebec, Canada

1148 SASS-KORTSAK, A., FICICI, S., PAUNIER, L., KOOH, S. W., FRASER, D., & JACKSON, S. H. Secondary metabolic derangements in patients with tyrosyluria (symposium). *Canadian Medical Association Journal*, 97(18): 1079-1083; discussion, 1084, 1967.

Three infants with tyrosyluria were investigated for metabolic derangements secondary to the defect in the metabolism of tyrosine; these disorders included cirrhosis, anemia, prothrombin deficiency, renal tubular abnormality, rickets, and hypoglycemia. The Ss were 6, 7, and 11 months of age. The hemolytic type anemia could have been related to an intracorpuscular defect secondary to the tyrosine metabolic defect. Liver function studies such as the bromsulphalein retention test, serum bilirubin, alkaline phosphatase, cephalin flocculation tests and serum proteins were abnormal. Prothrombin time and partial thromboplastin time were increased in all 3 Ss, and the bleeding time was increased in 1 S. All Ss had enlarged kidneys, more than 1 renal function impairment, markedly low serum phosphorus levels, and a tendency to hypoglycemia - although none had clinical signs of this disorder. Two Ss had radiological evidence of rickets. At autopsy the 3 showed a marked degree of hyperplasia of the islets of Langerhans. The adrenaline tolerance test and the fasting glucagon tolerance tests were flat. Tests of copper metabolism were difficult to interpret, but the infants did not have Wilson's disease. The ascorbic acid given to 1 infant had no effect on the excretion of Millon-reactive substances. (14 refs.) - *R. Froelich.*

Research Institute
Hospital for Sick Children
Toronto, Ontario, Canada

1149 SASS-KORTSAK, A., FICICI, S., PAUNIER, L., KOOH, S. W., FRASER, D., & JACKSON, S. H. Observations on treatment in patients with tyrosyluria (symposium). *Canadian Medical Association Journal*, 97(18):1089-1092; discussion, 1093-1095, 1967.

Treatment with a low tyrosine, low phenylalanine diet markedly reduced the excretion of tyrosine and non-tyrosine Millon-reactive substances in 3 infants with hereditary tyrosyluria but resulted in the improvement and survival of only 1 of the 3. The diet contained 2.4 mg tyrosine/kg/day and 19 mg phenylalanine/kg/day without altering the calories or amount of protein. Patient 1 received the diet for only 23 days because of a terminal illness. The body weight remained constant. The urinary excretion of total Millon-reactive substances decreased markedly, and blood phenylalanine decreased to below 1.0 mg percent. The patient's fasting plasma tyrosine level was 18.6 μmoles/100 ml before the diet and 0.6 μmoles/100 ml on the ninth day of the diet. Despite this biochemical improvement, the infant died of *E-coli* infection. Patient 2 had a similar response to the diet and died with liver failure 2 weeks after treatment was begun. Patient 3 was started on the diet at 3½ years of age and was continued on it for 7 months. He responded biochemically like the others but also improved clinically. His behavior was improved and growth increased. Renal function improved markedly, but his hemolytic anemia persisted. He developed a primary hepatoma 6 months after treatment began and died 2 months later from this complication. (3 refs.) - *R. Froelich.*

Research Institute
Hospital for Sick Children
Toronto, Ontario, Canada

1150 General discussion: Screening aspects (symposium on hereditary tyrosinemia). *Canadian Medical Association Journal*, 97(18): 1096-1098, 1967.

Screening aspects of tyrosyluria and tyrosinemia are discussed by 6 participants. It is recommended that children born into families which already have an affected member should be tested by 3 weeks of age. The Quick prothrombin time, which is always low, should be the first test performed. There is no simple urine screening test, and 2-dimensional paper chromatography cannot be considered a screening procedure. Although a number of urine screening tests can be used, none are entirely satisfactory for tyrosinemia. The ferric chloride test does not always pick up hereditary tyrosinemia, and the Millon Reaction is variable and unsatisfactory. The dinitrophenylhydrazine test is probably as good a screening test as any. One big hazard is that a large number of false positives are caused by neonatal tyrosinemia. One viewpoint is that all infants should be serially screened by chromatography to detect the increasing number of detectable and treatable metabolic errors. An opposite view is that not enough is known about the disorders to begin large scale screening and that a place such as Chicoutimi, where the number of known cases is very high, should be a starting point for investigation. If hereditary tyrosinemia is an inherited abnormality of p-hydroxyphenylpyruvic acid oxidase, the heterozygous state may be detectable by biochemical means. (2 refs.) - *R. Froelich.*

1151 DALLAIRE, LOUIS. Genetic aspects of tyrosinemia (symposium). *Canadian Medical Association Journal*, 97(18):1098-1099, 1967.

The genetic aspects of tyrosinemia are not yet clarified, but an autosomal recessive inheritance has been suggested and a carrier frequency of 1 in 20 is presumed in the Chicoutimi area. Since the sex ratio of affected patients is 16 males and 21 females, there does not seem to be a sex-linked gene involved. In the Chicoutimi area, where tyrosinemia is more common, there very likely is a strong familial link between the parents. The estimated frequency of the disease is affected by a number of factors such as abortions and stillbirths. If the proband is not included in estimating the proportion of affected infants to the number of pregnancies per family, the ratio is 11:59. If the proband is included, the ratio is approximately 1:3. In a population where the consanguinity rate is high, the gene frequency cannot be made directly from the frequency of the disease. The data concerning this problem is not adequate, and further investigations should include a genetic history for each patient. (1 ref.) - *R. Froelich.*

McGill University
Montreal Children's Hospital
Research Institute
Montreal, Quebec, Canada

1152 LABERGE, C., & DALLAIRE, L. Genetic aspects of tyrosinemia in the Chicoutimi region (symposium). *Canadian Medical Association Journal*, 97(18):1099-1100, 1967.

A study of 26 families with 1 or more affected children revealed a carrier rate of the autosomal recessive gene of 1:20 to 1:31. In the 26 families, 19 had 1 affected child, 3 had 2 affected children, and 4 had 3 affected children. Segregation analysis was done by the *a priori* method using the Lenz-Hogben technique. If a recessive hypothesis is assumed, the observed number of affected individuals (33) does not differ significantly from the expected number of affected (36.4). Segregation analysis by the *a posteriori* method of Haldane gave an expected value of 32.95, which compares well with the observed number (33) and strongly favors the recessive mode of inheritance. The prevalence of tyrosinemia in Chicoutimi County (population 137,000) is 27:100,000. The high carrier rate is further enhanced by the fact that there are no close-cousin marriages among parents of affected children. The ancestors of the patients came mainly from Charlesvoix County and the north shore of the St. Lawrence river in Quebec. Therefore, eastern Quebec should be included in any screening program for tyrosinemia. (3 refs.) - *R. Froelich.*

Hôspital St-Michel Archange
Quebec, Quebec

1153 MATHEWS, J., & PARTINGTON, M. W. Tyrosine load tests in newborn babies. *Biologia Neonatorum*, 11(5/6):273-276, 1967.

L-tyrosine load tests in full term babies in the first week of life indicated that they were less able to metabolize tyrosine than

older children. The administration of either ascorbic acid or folic acid in large doses with the tyrosine load facilitated the removal of tyrosine from the blood stream. This suggests that the newborn baby's decreased ability to metabolize tyrosine may be, in part, explained by the inhibition of p-HPPA oxidase by its substrate. (11 refs.) - *Journal summary.*

Department of Pediatrics
Queen's University
Kingston, Ontario, Canada

1154 CHANTLER, C., *BAUM, J. D., & NORMAN, D. A. Dextrostix in the diagnosis of neonatal hypoglycaemia. *Lancet*, 2(7531): 1395-1396, 1967.

To detect hypoglycemia in the newborn, the glucose content was estimated by 'Dextrostix' (Ames Co.) and by the laboratory on 380 blood-samples. Of these samples, there was only 1 in which the blood-glucose was thought to be above 20 mg/100 ml with dextrostix when in fact it was below this level. Dextrostix can therefore be used as a screening test to detect blood-glucose concentrations below 20 mg/100 ml. Nevertheless, all results below 20 mg/100 ml should be confirmed by laboratory estimation. (8 refs.) - *Journal abstract.*

*Institute of Child Health
Hammersmith Hospital
London, W. 12, England

1155 ANTONY, GABOR J., UNDERWOOD, LOUIS E., & *VAN WYK, JUDSON J. Studies in hypoglycemia of infancy and childhood. *American Journal of Diseases of Children*, 114(4):345-369, 1967.

Hypoglycemic convulsions were found to be associated in some way with inappropriate insulin secretion in 18 children, 3 of whom were MR. Severity and age of onset provided the only clear basis for classification. Seven had onset before 1 year of age and tended to have a more malignant course, 6 had onset after 1 year of age, 3 had hypopituitarism and hypoglycemia, and 2 had an islet cell adenoma. Measurement of blood sugar regulation included tests of oral glucose tolerance, intravenous glucose tolerance, glucagon, epinephrine, insulin sensitivity, tolbutamide, and leucine tolerance. No single test was infallible in confirming the diagnosis, and no combination of tests could reliably establish the pathogenesis. The cause of hypoglycemia was determined only for those children with hypopituitarism and islet cell tumor. In these children removal of the tumor or adequate substitution therapy provided effective relief of the disorder. Treatment for those with idiopathic hypoglycemia was empirical and substantially less adequate. Dietary measures included a low-leucine diet, a high protein diet, and a high carbohydrate-protein diet. Although none proved effective, decreasing the periods of fasting was beneficial. The modes of drug or surgical treatment that proved at least partially effective in the idiopathic group were those that altered insulin secretion. This included pancreatic resection (on 4) and drugs such as epinephrine in oil, zinc glucagon, and glucocorticoids. (84 refs.) - *R. Froelich.*

*University of North Carolina
School of Medicine
Chapel Hill, North Carolina 27514

1156 ADAM, PETER A. J., KING, KATHERINE, & SCHWARTZ, ROBERT. Model for the investigation of intractable hypoglycemia: Insulin-glucose interrelationships during steady state infusions. *Pediatrics*, 41(1): 91-105, 1968.

Plasma insulin (I) and glucose (G) levels varied in 9 normal adults (NA), 4 normal children (NC), 5 diabetic children, and 4 hypoglycemic infants when they were infused continuously with G at different rates. At steady rates of infusion the blood G and I levels of NA and NC appeared to have a comparable relationship. However, at low rates of infusion NC disposed of the G faster, regardless of the plasma I level; this may indicate an increased hepatic uptake. Furthermore, plasma free fatty acid (FFA) levels in NC paralleled those of NA, except at low infusion rates when no depression occurred. Non-insulin dependent diabetic children as a whole had slightly slowed rates of glucose assimilation at higher rates of infusion, although a child who became I dependent had rapid assimilation. All these children had unmeasurable I levels until they became

slightly hyperglycemic. Again hepatic adjustment was thought to explain these developments. Hypoglycemic children showed either slight hyperinsulinemia at low G levels or deficient I response at any G concentration. Deficient hepatic regulation may explain the occurrence of hypoglycemia in these children in the face of low I levels. Another argument for hepatic involvement is that hypoglycemia continued in the face of low-fasting I and I response to hyperglycemia in a child with a post-pancreatectomy. (44 refs.) - *E. Gaer.*

Cleveland Metropolitan
General Hospital
3395 Scranton Road
Cleveland, Ohio 44109

1157 SPAETH, GEORGE LINK, & BARBER, G. WINSTON. Prevalence of homocystinuria among the mentally retarded: Evaluation of a specific screening test. *Pediatrics*, 40 (4,I):586-589, 1967.

At 3 institutions in the United States the prevalence of homocystinuria among 9,488 MR patients screened by either nitroprusside or chromatography was about 0.02 percent, which is less than the previous estimation of 0.3 percent in Northern Ireland. The total patient sample was 22,994, of which 2,348 had both MR and ocular abnormalities. Cyanide-nitroprusside was used in 7,723 patients, and chromatography was used in 1,765. Of those tested, 1,155 patients had both MR and ocular abnormalities. There were 91 positive cases detected by cyanide-nitroprusside; 2 of these actually had urine containing homocystine and 1 had homocystine in a different laboratory. Characteristics of the 3 patients with homocystinuria included an age range of 14 to 23 years, IQ range of 39 to 80, dislocated lenses (in 2), and male sex. If the 1 case which was detected in a different laboratory was not included, the prevalence of homocystinuria in MR cases was 0.021 percent. The prevalence of homocystinuria in MR cases with ocular abnormality was 0.17 percent. Of 14 cases (from an eye hospital) with bilateral dislocated lenses of nontraumatic origin, 1 had homocystinuria (7.1 percent). Substitution of silver diammine ion for cyanide as the reducing agent made the nitroprusside test nearly specific for homocystine. (6 refs.) - *R. Froelich.*

Wills Eye Hospital
1601 Spring Garden Street
Philadelphia, Pennsylvania 19130

1158 WAISMAN, HARRY A., & GERRITSEN, THEO. Homocystinuria. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 5, p. 58-71.

Homocystinuria is an abnormal metabolic condition in which the amino acid homocystine is excreted in the urine. The accompanying syndrome usually includes MR and/or subluxated lenses, ectopia lentis, iridodonesis, fine sparse hair, and convulsive disorders. Death is usually caused by thromboembolic phenomena. The pathological findings in the brain of a homocystinuric male (CA, 1 yr) included edema, demyelinization, cystic accumulation of fluid, spongy degeneration, and microgyria. Metabolic studies of 2 patients, identified by the presence of an unusual homocystine absorption peak in the urine, provide some evidence that: (1) overloading the methionine degradation system of a person with this metabolic error causes increased homocystine excretion and (2) the addition of both L-methionine and L-serine causes a decrease in homocystine level. The nitroprusside NaCN reagent should be used to test the urine of children with MR and/or eye difficulty or subluxated lenses in order to identify the presence of homocystine in the urine. Additional research aimed at identifying the exact metabolic error involved in homocystinuria is needed. (14 refs.) - *J. K. Wyatt.*

1159 GAULL, GERALD. Homocystinuria. In: Woollam, D. H. M., ed. *Advances in Teratology: Volume Two.* New York, New York, Academic Press, 1967, Chapter 3, p. 101-126.

An individual with homocystinuria, an inborn error of methionine metabolism, has an elevated methionine and homocystine level in the plasma and cerebrospinal fluid, cystathionine synthase deficiency in the liver and brain, and a virtual absence of cystathionine from the brain. Without the enzyme, metabolism of methionine to cystathionine to cystine is interrupted. Loading studies have confirmed the decreased rate of methionine metabolism, and nitrogen balance studies have demonstrated that cystine becomes an essential amino acid in this disorder. The pathogenesis may be related to accumulation along the metabolic pathway before cystathionine synthase or a deficiency distal to the enzyme. The enzymatic defect appears to be transmitted as an autosomal recessive trait with a

high incidence of mental illness in the families of affected Ss. Patients manifest a distinct clinical picture including ectopia lentis, malar flush, livido reticularis, thromboembolic phenomena, progressive skeletal deformities, MR, a peculiar shuffling gait, and fine, fair hair. Generalized intimal fibrosis and elastic fiber degeneration have been found in the medium and large arteries. Livers have shown fatty change (most severe in the centrilobular area) and are unaccompanied by fibrosis. All cases with dislocated lenses have been associated with degenerative changes in the zonular fibers. Central nervous system changes are referable to thrombosis or are non-specific and most apparent in the gray matter. Therapy is presently experimental and consists of a low methionine and high cystine diet. Cystathionine does not appear to be needed in the diet since its only known function is to act as an intermediate in the conversion of methionine to cystine and since its ability to cross the blood-brain barrier is negligible. In lieu of methionine, supplementary methyl donors may prove necessary. Further elucidation of the pathogenesis of homocystinuria may provide a valuable model for investigation by multiple disciplines. (45 refs.) - *A. C. Molnar.*

1160 SCHNEIDERMAN, L. J. Latent cystathioninuria. *Journal of Medical Genetics*, 4(4):260-263, 1967.

Latent cystathioninuria, which is defined as the excretion of large quantities of cystathionine after methionine ingestion, was found in 2 MR institutionalized brothers. The propositi were studied on 2 occasions 3 years apart. A control population of 50 MR boys (matched for CA) from the same institution as the propositi and 50 volunteer medical students was studied. Twenty-five of the MR controls were from the same ward and shared the same diet as the propositi. Each urine sample was tested by 2-dimensional chromatography. Cystathionine was identified by both electrophoretic and chromatographic methods. The methionine load consisted of D-L-methionine powder, 5 gm suspended in juice. Latent cystathioninuria was distinguished from cystathionuria by the fact that the propositi did not produce detectable amounts of cystathionine when on a normal diet. None of the control Ss produced large amounts of cystathionine in the urine following the methionine load, but 2 normal brothers, 3 MR Ss, and a normal brother of an MR S all showed a small degree of cystathionine in response to the load. A similar response was noted in relatives of the propositi. There appears to be a variation in cystathionine excretion that follows familial clustering. The incidence of the positive trait may be about 4 percent. (8 refs.) - *R. Froelich.*

Stanford University School
of Medicine
Palo Alto, California 94304

1161 STEPHENSON, J. B. P., & McBEAN, M. S. Diagnosis of phenylketonuria (phenylalanine hydroxylase deficiency, temporary and permanent). *British Medical Journal*, 3 (5565):579-581, 1967.

A male infant tentatively diagnosed as having classical phenylketonuria was placed on a low phenylalanine diet but later when he was found to have a normal phenylalanine loading test, his condition was re-evaluated as temporary phenylalanine hydroxylase deficiency. During the first 2 months of life, he had demonstrated blood phenylalanine levels (Guthrie test) between 12 and 50 mg/100 ml. He had been started on a low phenylalanine diet at 33 days of age and 2 months later had developed anemia and convulsions. Although phenylalanine had been progressively increased in his diet, the serum phenylalanine had not risen to 3 mg/100 ml. An unrestricted diet caused no problems and at 7 months of age an oral phenylalanine tolerance test elevated the serum phenylalanine to only 3.6 mg/100 ml at 2 hours after loading. A rise in serum tyrosine confirmed the presence of phenylalanine hydroxylase. At 8 months of age, he gave the clinical impression of having some psychomotor retardation. After this discovery, 31 infants then receiving low-phenylalanine diets for PKU were reassessed; all were found to have persistent phenylalanine hydroxylase deficiency. All these infants, including those who were asymptomatic, had a persisting tendency to hyperphenylalaninemia. Since MR may result from phenylalanine deficiency, reassessment of PKU should be done when a serum concentration of 3 gm/100 ml is difficult to sustain. (20 refs.) - *R. Froelich.*

Royal Hospital for Sick
Children
Glasgow, C. 4., Scotland

1162 WILLIAMSON, MALCOLM, KOCH, RICHARD, & HENDERSON, ROBERT. Phenylketonuria in school age retarded children. *American Journal of Mental Deficiency*, 72(5):740-747, 1968.

Procedures were developed for conducting mass screening of school-age retarded children for phenylketonuria (PKU). The efficiency of these procedures was demonstrated by applying them in a statewide screening program in which 32,818 children (88.3 percent of those available) were tested. Parent refusal, absenteeism, and inability to void accounted for 11.7 percent failure to test. Level of retardation was unrelated to successful application of the procedures. A higher proportion of children in elementary grades were screened than were those in high school. Sixty-eight PKUs were located of which 26 were newly identified and 42 were known cases. Prevalence ratios of PKU by type of handicap were: 1:750 for the EMR; 1:175 for the TMR; and 1:105 in state institutions for the retarded. The procedures represent a "model" applicable for screening children in the community for any disorder which requires a fresh urine specimen. (5 refs.) - *Journal abstract.*

Childrens Hospital of
Los Angeles
Los Angeles, California 90027

1163 Welfare Administration. *Recommended Guidelines for PKU Programs*. Children's Bureau. Washington, D. C., Superintendent of Documents, U. S. Government Printing Office, 1966, 12 p.

Guidelines recommended for a comprehensive PKU program include screening of all newborns; comprehensive follow-up for patients presumed positive for PKU; and long-term, comprehensive, multidiscipline follow-up and care for patients with confirmed diagnosis of PKU. For screening newborns, the Guthrie test or the McCaman-Robins method is suggested since both are simple and reliable. A critical factor is a central laboratory facility to perform the tests. A comprehensive follow-up should include: confirmatory tests, clinical and allied health services (pediatric, nutritional, nursing, social, psychological, and consultive), and family consultations and considerations. (10 refs.) - *A. Huffer.*

1164 U. S. WELFARE ADMINISTRATION, CHILDREN'S BUREAU. *State Laws Pertaining to Phenylketonuria as of November 1966.* Washington, D. C., Superintendent of Documents, U. S. Government Printing Office, 1967, 43 p.

The texts of state laws relating to screening for PKU were presented for the 37 states having such laws as of November 1966. (No refs.) - *J. Snodgrass.*

1165 SILBERBERG, DONALD H. Phenylketonuria metabolites in cerebellum culture morphology. *Archives of Neurology*, 17(5): 524-529, 1967.

Exposure of myelinating cultures of rat cerebellum to metabolites which are increased in phenylketonuria (PKU) revealed that, on an equal-molar basis, indole and not phenylalanine analogues produced changes resembling the pathologic lesions of PKU. The histologic lesions of PKU were used as indices to determine the toxicity of 15 compounds. Cover-slip cultures of cerebellum from 12 to 36-hour-old rats were incubated with different concentrations of the compounds. The amount of growth; appearance of cells; time of first myelinization; survival of intact myelin; and the survival and appearance of neurons, glia, and fibroblasts were noted. L-phenylalanine produced no visible effects in 9.0×10^{-3}M concentrations. Three indole acids (indole-3-acetic, pyruvic, and lactic acid) allowed early myelin formation and normal development until 10 to 14 days *in vitro* (DIV). Phospholipids in vacuoles appeared in some glia and were followed by degeneration and demyelination. Axons remained intact and neurons rarely contained vacuoles. Indican produced the same qualitative changes, but the appearance of myelin was delayed until 15 to 16 DIV and degenerative changes began at 18 to 20 DIV. Phenylacetic acid and pOH phenylacetic acid produced slight toxicity above 4.0×10^{-3}M, and phenylpyruvate produced toxicity at 3.2×10^{-3}M. The similarity of the toxicity of the indoles *in vitro* to those in PKU *in vivo* may be relevant to the pathogenesis of the disease. (21 refs.) - *A. C. Molnar.*

Department of Neurology
Hospital of Univeristy
of Pennsylvania
Philadelphia, Pennsylvania 19104

1166 KAUFMAN, SEYMOUR. The conversion of phenylalanine to tyrosine and its relation to phenylketonuria. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 8, p. 119-125.

Studies on the roles of the 2 enzymes required in the normal hydroxylation system of metabolizing phenylalanine to tyrosine indicate that the phenylalanine hydroxylating enzyme is missing in phenylketonuria. The 2 enzymes, "rat liver enzyme" and "sheep liver enzyme," were purified from liver extracts. Balance studies revealed that the hydroxylation step required these 2 enzymes in order to cause the disappearance of equal amounts of reduced triphosphopyridine nucleotide (TPNH) oxygen and phenylalanine and the formation of equal amounts of triphosphopyridine nucleotide and tyrosine. Further studies indicated that the rat liver enzyme, phenylalanine, and oxygen were required for tyrosine formation. The rat liver enzyme (believed to be phenylalanine hydroxylase) catalyzed a twofold reaction: phenylalanine was oxidized to tyrosine, and tetrahydropteridine was oxidized to dihydropteridine. In the presence of TPNH, the sheep liver enzyme catalyzed a reduction of the dihydropteridine back to the tetrahydro level. Tetrahydropteridine functioned as the specific electron donor to molecular oxygen. Further studies on the structure of the hydroxylation cofactor from rat liver suggest that the cofactor has a structural relationship to biopterin and sepia pteridine. (8 refs.) - *J. K. Wyatt.*

1167 VASSELLA, F., COLOMBO, J. P., HUMBEL, R., & ROSSI, E. L-Tryptophanstoffwechsel bei der Phenylketonurie. (L-tryptophan metabolism in phenylketonuria.) *Helvetica Paediatrica Acta*, 23(1):22-36, 1968.

Tryptophan metabolism was studied in 6 patients with phenylketonuria. Urinary excretion of metabolites of the kynurenine pathway which is low in the untreated patient increases on phenylalanine-restricted diet, while excretion of indoles decreases in treated phenylketonuria. An oral load with L-tyrosine does not produce any measurable change in tryptophan metabolism. Intravenously administered L-tryptophan in untreated phenylketonuria is metabolized as well as orally administered L-tryptophan in the treated patient. It is concluded that the abnormality of tryptophan metabolism in phenylketonuria is mainly due to a defective absorption of this aminoacid from the gut. (42 refs.) - *Journal summary.*

Universitätskinderklinik Bern
Bern, Switzerland

1168 WOOLF, L. I., GOODWIN, B. L., CRANSTON, W. I., WADE, D. N., WOOLF, F., HUDSON, F. P., & McBEAN, M. S. A third allele at the phenylalanine-hydroxylase locus in mild phenylketonuria (hyperphenylalaninaemia). *Lancet*, 1(7534):114-117, 1968.

Two unrelated children with mild phenylketonuria (PKU), both with some ability to convert phenylalanine to tyrosine, and their parents were examined. In each case, 1 parent metabolized a loading dose of phenylalanine at a rate that decreased as the concentration was raised, in contrast to the findings both in heterozygotes for typical PKU and in normal Ss. It is suggested that the 2 unusual parents and their affected offspring possessed a variant form of phenylalanine hydroxylase strongly inhibited by excess phenylalanine and coded for by a third allele at the phenylalanine-hydroxylase locus. Not all cases of hyperphenylalaninemia possess this variant enzyme, nor can the possibility be excluded that the variant gene codes for some other enzyme in the conversion of phenylalanine to tyrosine. (21 refs.) - *Journal abstract.*

Department of the Regius
Professor of Medicine
Radcliffe Infirmary
Oxford, England

1169 BROWN, ELEANOR S., & WAISMAN, HARRY A. Low-phenylalanine diets for pregnant PKU heterozygotes are unnecessary. *Pediatrics*, 40(6):1062-1063, 1967. (Letter)

On the basis of research findings and the probability that the incidence of heterozygous women is 200 times greater than that of PKU women, treatment with low-phenylalanine diets is not recommended to prevent high plasma levels of phenylalanine. To avoid harm to the women from unnecessary

diets, treatment should be initiated only when the maternal plasma phenylalanine levels are above 10 mg/100 ml. (3 refs.) - *W. Asher.*

University of Wisconsin
Medical Center
Madison, Wisconsin 53706

1170 JOHNSON, JOHN D., & JENNINGS, RUFUS. Hypocalcemia and cardiac arrhythmias. *American Journal of Diseases of Children*, 115(3):373-376, 1968.

A 5½-year-old MR S with rickets due to vitamin D deficiency had a complex cardiac arrhythmia which responded to oral vitamin replacement. MR and blindness created a feeding problem which in turn produced the deficiency in vitamins and calcium. Initial electrocardiogram (ECG) showed a supraventricular tachycardia alternating with sinus bradycardia and intermittent sino-atrial block and nodal escape. Intravenous calcium administration was terminated when it produced a sinus arrest and nodal rhythm. Treatment with oral vitamin D (10,000 units/day) and a high calcium diet produced a normal sinus rhythm. Initial serum calcium was 5.6 mg/100 cc. Two and one-half weeks after initiation of therapy, the S had another episode of sino-atrial block and nodal escape rhythm which reverted to normal spontaneously. ECG after 12 months revealed sinus rhythm with incomplete right bundle branch block. No other abnormalities were present. Hypocalcemia may cause cardiac arrhythmias as well as the characteristic ECG changes of QTc interval prolongation. (12 refs.) - *W. A. Hammill.*

Laboratory of Clinical
Science
National Institute of
Mental Health
Bethesda, Maryland 20014

1171 PLATT, B. S., & STEWART, R. J. C. Effects of protein-calorie deficiency on dogs: 1. Reproduction, growth and behaviour. *Developmental Medicine and Child Neurology*, 10(1):3-24, 1968.

Dogs maintained from weaning on diets of low protein value grow slowly and develop changes in their bones, brains and behavior. When they reach adulthood the protein-calorie deficient bitches produce smaller and fewer pups per litter than do well-nourished littermates. If the congenitally malnourished offspring are given diets of low protein value, they show more marked abnormalities than do pups born of normal mothers and given at weaning diets of similar protein value. The pups have an abnormal gait, especially of the hind legs, run and follow less readily and tire more easily than normal animals, and athetoid movements of the head and neck are common. Exercise exacerbates the abnormalities and in some instances convulsive seizures have occurred. The intensity of the changes reaches a peak at about 2 to 3 months of age and more acute manifestations then recede but do not fully disappear. Many of the abnormalities of gait, growth and EEG pattern disappear when the deficient animals are given diets of high protein value. The most marked recovery occurs amongst animals born of normal mothers and subjected to a period of protein-calorie deficiency after weaning. In contrast, congenitally malnourished puppies, even when they are given diets of high protein value from weaning, remain small and it is suggested that full recovery may never occur. Rehabilitated dogs, even when adult, are often obese, with short legs; they remain somewhat apprehensive and mix less well than normal dogs. The possible implications for man are discussed. (66 refs.) - *Journal summary.*

National Institute for Medical
Research
Mill Hill
London, N. W. 7, England

1172 MOSER, HUGO W., YOUNG, DEAN, & EFRON, MARY L. Diagnosis and treatment of maple syrup urine disease. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 6, p. 72-102.

Delay in diagnosing and providing dietary therapy for a case of maple syrup urine disease until the patient was 38 days old illustrates the need for the development of a simple diagnostic measure which can be applied to all neonates before symptoms occur. In the case cited, parents had noted a characteristic diaper odor at age 5 days but were unaware of its diagnostic import. Evaluation at age 15 months revealed that the child was MR but had achieved normal somatic growth. A new chromatic screening process, adapted for use with whole blood samples for the purpose

of identifying disorders of amino acid metabolism other than phenylketonuria, may prove to be a useful addition to mass infancy screening programs. (25 refs.) - *J. K. Wyatt.*

1173 BAUMGARTNER, R., SCHEIDEGGER, S., STALDER, G., & HOTTINGER, A. Argininbernsteinsäure-Krankheit des Neugeborenen mit letalem Verlauf. (Neonatal death due to argininosuccinic aciduria.) *Helvetica Paediatrica Acta*, 23(1):77-106, 1968.

The occurrence of a lethal course of argininosuccinicaciduria in an 8-day-old infant is reported. The metabolic abnormalities and clinical symptoms are compared with the 13 cases already described. Soon after birth with the institution of normal formula, the patient became lethargic, nursed poorly and had feeble reflexes. At the age of 4 days he presented generalized seizures which could be controlled only by anticonvulsive drugs. After progressive somnolence he died in irreversible coma. There was liver enlargement and elevation of serum transaminases. The severe clinical features were similar to other inborn errors of metabolism which may be lethal in early infancy, such as galactosemia, maple syrup urine disease, hyperglycinemia. The most severe pathological changes were observed in the liver, kidney, myocardium and brain. There were necroses in several organs similar to those occurring in many toxic conditions. Multiple necrotic foci were especially prominent in the liver parenchyma. Degenerative alterations including multiple tubular casts were observed in the kidney. The myocardium also displayed extensive necroses. In the brain a spongy alteration of the white and grey matter was found, as well as a deficiency in myelinization and degeneration of the myelin sheaths. The histological findings point to a process beginning already in fetal life. (44 refs.)- *Journal summary.*

Universitätskinderklinik
Basel, Switzerland

1174 KRAKOFF, IRWIN H., & MURPHY, M. LOUIS. Hyperuricemia in neoplastic disease in children: Prevention with allopurinol, a xanthine oxidase inhibitor. *Pediatrics*, 41 (1):52-56, 1968.

The marked decrease in serum and urinary uric acid (UA) levels resulting from the administration of allopurinol (APL) to 21 pediatric patients with hyperuricemia due to neoplastic disease or its treatment indicates that the drug has value in reducing the incidence and danger of UA nephropathy in such patients. The patients, a majority of whom were suffering from leukemia or lymphoma, were treated with APL in divided doses of 10 mg/kg/day along with their antineoplastic therapy (ANT). All showed a decrease in serum UA. There was a similar decrease in urine UA in those Ss in whom it was measured. This was consistent even in those patients whose ANT caused marked, rapid neoplastic regression. Urine excretion was not shown to be impaired, and urinary oxypurine levels were increased - but to a lesser degree than the decrease of UA excretion. Generally, APL was started 24 hours before the institution of ANT. In those cases where immediate ANT was urgent, APL was started concurrently. In both cases UA production was successfully inhibited. Except for a mild erythematous rash, no serious toxicity of the drug was found. From the results of the study it appears that APL is an effective and relatively physiologic method of decreasing UA production and nephropathy in those neoplastic patients whose treatment may cause hyperuricemia. (18 refs.) - *E. Gaer.*

Sloan-Kettering Institute
New York, New York 10021

1175 MORRIS-JONES, P. H., *HOUSTON, I. B. & EVANS, R. C. Prognosis of the neurological complications of acute hypernatraemia. *Lancet*, 2(7531):1385-1389, 1967.

Eighteen (36 percent) of a series of 50 cases of acute hypernatremia had a neurological syndrome which included convulsions, muscular hypertonicity, and depression of consciousness. This syndrome was commoner with higher levels of either serum-sodium or blood-urea, but the data suggest that serum osmolality may be the most significant factor. The initial mortality rate was 20 percent. Of the 40 survivors, 32 could be examined: 12 (37 percent) of these had abnormalities on neurological examination, intelligence testing, or electroencephalography; in several, however, the abnormalities were probably unrelated to the earlier hypernatremia, and only 3 out of 32 (9 percent) had both related and symptomatically important lesions. This suggests that, in some instances, convulsions were caused by transient cerebral edema rather than by infarction or hemorrhage, and may therefore be

preventable by improvement of the regimen of rehydration. (32 refs.) - *Journal abstract.*

*Department of Child Health
St. Mary's Hospitals
Manchester 13, England

1176 STONE, MARTIN L., LUHBY, A. LEONARD, FELDMAN, ROBERT, GORDON, MYRON, & COOPERMAN, JACK M. Folic acid metabolism in pregnancy. *American Journal of Obstetrics and Gynecology*, 99(5):638-646; discussion, 646-648, 1967.

Studies of folic acid metabolism in 250 unselected pregnant women revealed that folic acid deficiency: (1) was present in 22 percent, (2) could be present without overt megaloblastic anemia, (3) increased in severity at or near term, (4) increased in complicated pregnancies, and (5) could be of significance in infant growth and development. Patients were evaluated by measuring blood and marrow cellular indices, serum L. casei folate activity, rate of clearance after intravenous injection of folic acid from plasma, and urinary excretion of formiminoglutamic acid (FIGLU) after a histidine loading procedure. The excretion of FIGLU is important since it is a metabolic intermediate of histidine that is increased when folic acid is low. The correlation between FIGLU excretion and folic acid deficiency was high, and moderate elevations preceded the overt hematological changes. The incidence of FIGLU excretors was 80 percent in twin pregnancy, 60 percent in patients with placental abruption, and 60 percent in women with toxemia of pregnancy. Folic acid deficiency has been suggested as a cause of fetal brain damage, MR, and retarded growth and development. Five infants of folic acid defecient mothers were also found to have low folic acid stores which could develop into overt clinical deficiency. Three infants responded to folic acid supplementation. (36 refs.) - *R. Froelich.*

New York Medical College
Metropolitan Medical Center
New York, New York

1177 MORROW, GRANT, III, BARNESS, LEWIS A. & EFRON, MARY L. Citrullinemia with defective urea production. *Pediatrics*, 40 (4,I):565-574, 1967.

A 21-month-old girl with citrullinemia, defective urea production, microcephaly, and MR had appeared normal until 5½ months of age. She was admitted for evaluation at age 8 months with vomiting, hematemesis, hematuria, purpura, melena, and irritability. Shortly thereafter she developed seizures and temporary hemiparesis. Citrulline was found in the urine by chromatography. After a reduction in her protein intake the plasma citrulline concentration decreased from 32.9 to 16.3 mg/100 ml. Urea excretion fell from 880 to 358 mg/day, and urine citrulline fell from 1,394 to 144 mg/day. Cerebrospinal fluid, urea nitrogen, and ammonia nitrogen were decreased. When the S was about 1 year of age, increased protein intake rapidly resulted in vomiting, lethargy, irritability, rising blood ammonia, and oliguria. After protein restriction she again improved. Triiodothyronine, pyridoxine, and neomycin were administered with no beneficial effects. Since the arginine loading increased the urine urea excretion without clinical change, she was evidently able to convert all of the ingested L-arginine to urea and ornithine. In addition, nitrogen balance studies also suggest alternate pathways for degradation of arginine. Although at 21 months of age she appears physically normal except for microcephaly, she is behind in developmental milestones and scored an MA of 8½ months on the Cattell Intelligence Scale. (28 refs.) - *R. Froelich.*

Hospital of the University
of Pennsylvania
3600 Spruce Street
Philadelphia, Pennsylvania 19104

1178 SPARKES, R. S., BEUTLER, E., & WRIGHT, S. W. Galactosemia in a 24 year old man; detection by enzyme studies. *American Journal of Mental Deficiency*, 72(4):590-593, 1968.

A 24-year-old white man (IQ 47) was first discovered to have galactosemia when a red blood cell assay for galactose-1-phosphate uridyl transferase demonstrated absence of enzyme activity. Several urine tests have been negative for reducing substances. The patient is MR, has a history of dietary intolerance in infancy, and has cataracts; but there is no evidence of liver involvement and his general body growth has not been significantly affected. The reason for these mild effects is not known, but various possibilities are presented. The findings, however, strongly question the efficacy of urine screening tests used at present for the detection of galactosemia, and lead us to suggest that these be replaced by newer

screening tests which are based on the red blood cell enzyme activity. (17 refs.) - *Journal abstract.*

Department of Medicine
UCLA School of Medicine
Los Angeles, California 90024

1179 KOMROWER, G. M. Recent developments in the management and prognosis of some inborn errors of metabolism: Galactosaemia. *Proceedings of the Royal Society of Medicine*, 60(11,I):1155-1157, 1967.

A prolonged follow-up of galactosemic children revealed that 2 of 10 diagnosed early and treated by dietary restriction had IQs > 100 and that the other 8 had IQs between 65 and 90; these results have led to galactose restriction in pregnant women who have previously given birth to an affected child. A total of 13 children, including 3 who were late in being diagnosed and treated and subsequently demonstrated low IQs, were followed. Physically they were thin, wiry, and below the fiftieth percentile in weight; some had cataracts. Psychological testing revealed poor coordination, clumsiness, restlessness, poor arithmetic, visual-perceptual problems, and psychological difficulties in the realm of interpersonal contacts. EEGs were abnormal in 5, with epileptogenic foci in 2. Galactose is converted to glucose in the body by way of 3 enzymatic reactions, the last of which is reversible so that galactose synthesis is capable of taking place from glucose in individuals on a galactose-free diet. Liver, brain, red blood cells, and muscle all have the requisite enzymes for the process; in galactosemic children a deficiency of the enzymes has caused accumulation of intracellular galactose-1-phosphate which impairs cellular metabolism. The rationale for the galactose-free diet is to reduce and keep the level of tissue galactose-1-phosphate low. However, even 3 affected children on a restricted diet since birth have blood or liver abnormalities due to galactose which is felt to have occurred in utero. While dietary restriction of milk in mothers with previously affected children may be of value in reducing transplacental transport of galactose, maternal manufacture of lactose during the latter part of pregnancy still poses a risk; this could be an argument for early induction of labor. Furthermore, it is doubtful that increased tolerance to galactose develops in affected individuals; therefore, ingestion should be kept to a minimum througout life. (18 refs.) - *E. Gaer.*

No address

1180 ROTH, JEFFREY C., & WILLIAMS, HIBBARD E. The muscular variant of Pompe's disease. *Journal of Pediatrics*, 71(4):567-573, 1967.

The case of a 14-month-old girl having the muscular variant of Pompe's disease with normal leukocyte alpha-1, 4 glucosidase activity, and absent muscle and liver alpha-1, 4 glucosidase activity is presented, along with a review of the literature on this disease. The S was admitted for evaluation because of muscle weakness and respiratory infections that had begun at age 6 months. Shortly after birth she was noticed to have a large and protruding tongue. She had little spontaneous movement, a left-sided ptosis, dull looking facies, a grade I cardiac murmur, wasted metacarpal interossei, and patulous anal sphincter. Laboratory studies revealed elevated serum glutamic oxaloacetic transaminase serum glutamic pyruvic transaminase, lactic dehydrogenase with isoenzyme fraction, and creatine phosphokinase. An electromyogram showed lower motor neuron disease, and left gastrocnemius muscle biopsy showed greatly elevated glycogen content. Muscle histology revealed swollen fascicles, distended cystic sarcolemmal shells, and pyknotic irregular sarcolemmal nuclei. Alpha-1, 4 glucosidase activity was measured in leukocytes by William's method. Large doses of vitamin A did not produce improvement. A male sibling with hypotonicity, an enlarged tongue, and recurrent respiratory infections died at 11 months of age. (30 refs.) - *R. Froelich.*

University of Rochester School of Medicine
260 Crittenden Boulevard
Rochester, New York 14620

1181 FINE, RICHARD N., WILSON, WARREN A., & DONNELL, GEORGE N. Retinal changes in glycogen storage disease Type 1. *American Journal of Diseases of Children*, 115(3):328-331, 1968.

Three of 5 Ss with Von Gierke's disease (glycogen storage disease, Type 1) revealed paramacular lesions in the retina. The lesions were discrete, nonelevated, yellowish, and bilateral but did not affect visual acuity. Parents and unaffected siblings did not have these lesions. The S with the most severe lesions also had the most marked lipoprotein abnormalities, while those Ss with the same enzyme defect (glucose-6-phosphatase) but

311-967 O - 68 - 4

with minimally abnormal lipids had no lesions. Although the pathogenesis and biochemical nature of the lesions is unknown, these are probably related to the lipid abnormality. (3 refs.) - *W. A. Hammill.*

4614 Sunset Boulevard
Los Angeles, California 90027

1182 SUZUKI, KUNIHIKO. Cerebral G_{M1}-Gangliosidosis: Chemical pathology of visceral organs. *Science*, 159(3822):1471-1472, 1968.

The livers and spleens from 3 patients with cerebral G_{M1}-gangliosidosis contained greatly increased concentrations of a mucopolysaccharide tentatively identified as keratan sulfate. The concentration of a very soluble sialomucopolysaccharide was also increased. Concentrations of these compounds were not increased in the viscera of patients with Tay-Sachs disease (G_{M2}-gangliosidosis). G_{M1}-gangliosidosis appears to be a combined cerebral gangliosidosis and visceral mucopolysaccharidosis. (16 refs.) - *Journal abstract.*

Albert Einstein College
of Medicine
Bronx, New York

1183 WOLFF, O. H. Recent developments in the management and prognosis of some inborn errors of metabolism: Familial hyperlipidaemias. *Proceedings of the Royal Society of Medicine*, 60(11,I):1147-1149, 1967.

Dietary treatment, although at times disappointing, is the current method of therapy for the 3 distinctly recognized forms of familial hyperlipidemias (FH): essential fat-induced hypertriglyceridemia (EFIH), essential familial hypercholesterolemia (EFHC), and carbohydrate-induced hypertriglyceridemia (CIH). The latter 2 are associated with coronary heart disease (CHD). Paper electrophoresis of serum can separate the various lipid fractions, and each disease has a distinct fraction which accumulates. EFIH is characterized by autosomal recessive inheritance, accumulation of chylomicron material in the serum, lipoprotein lipase enzyme deficiency, cutaneous xanthomata, hepatosplenomegaly, and abdominal pain. It is diagnosed by a lag in the clearance of serum lipids after ingestion of a fat-containing meal. Treatment consists of initial restriction of fat in the diet. After the early stage of treatment when the physical signs and symptoms clear, the diet can be somewhat liberalized. EFHC is characterized by autosomal dominant inheritance, elevated serum cholesterol levels, and cutaneous xanthomata. Both homozygous and heterozygous conditions will show the elevation of cholesterol, with the former generally higher. While dietary restriction is thus far disappointing and not totally proven to be efficacious, particularly in the homozygote, it should be instituted in the heterozygote because of the high association with CHD. CIH is the most common type in adults. It is characterized by turbid fasting serum, elevated serum levels of triglyceride and cholesterol xanthomata, and strong association with diabetes mellitus. Treatment consists of a low carbohydrate, high fat diet. Treatment of adults with chlorophenoxyisobutyrate has also been of value. (16 refs.) - *E. Gaer.*

Institute of Child Health
University of London
London, England

1184 HAWORTH, J. C., FORD, J. D., & YOUNOSZAI, M. K. Familial chronic acidosis due to an error in lactate and pyruvate metabolism. *Canadian Medical Association Journal*, 97(13):773-779, 1967.

A North American Indian family with 3 MR children, 2 of whom died, demonstrated chronic metabolic acidosis which may have been caused by a partial inability to oxidize pyruvate. Of the 5 children in the family who died before 2 years of age, all had symptoms of the same disorder. The 3 children with MR also had convulsions, hypotonia, other neurological abnormalities, obesity, and signs of metabolic acidosis. Three children were healthy and normal. Two cases were described: a 16-month-old boy who died and a 7-month-old boy who survived. Both had chronic hyperlactatemia. After muscle stimulation, venous and arterial lactate and pyruvate levels were higher in the surviving patient than in the controls. In addition, the arterial pyruvate levels were higher than venous levels. During lactate and pyruvate tolerance tests, the disappearance rates of lactate and pyruvate from the blood were decreased. Alpha-ketoglutarate excretion was variable but elevated in a sister and occasionally elevated in the 16-month-old infant. The nature of this disorder is certainly familial but the exact

site of the metabolic error is unknown. A partial inability to dispose of pyruvate is suggested by the evidence. A shunting of pyruvate to lactate would explain the increased blood lactate during muscular exercise. (12 refs.) - *R. Froelich.*

The Children's Hospital
685 Bannatyne Avenue
Winnipeg 3, Manitoba
Canada

1185 HOLDEN, JACK D. The Russell-Silver's dwarf. *Developmental Medicine and Child Neurology*, 9(4):457-459, 1967.

A 1-year-old male infant with the Russell-Silver's syndrome demonstrated small size for gestational age, bilateral syndactylism, peculiar facies, left-sided hemihypertrophy, the "setting sun sign," and pseudohydrocephalus. The family and prenatal history was normal. His face was triangular shaped with down turned mouth and a left-sided predominance. A normal pneumoencephalogram was done at 11 weeks of age because the diagnosis had not yet been made. His development was delayed somewhat in comparison to that of his siblings. Making the diagnosis in this syndrome is important in order to prevent useless pneumoencephalogram and to counsel the parents. The major criteria of the syndrome are shortness of stature, small size for gestational age, variation in sexual development, and body asymmetry. The minor criteria are pseudohydrocephalus, triangular shape of face, inverted V-shaped mouth, cafe-au-lait spots, clinodactyly, and syndactyly. (4 refs.) - *R. Froelich.*

Fitzsimons General Hospital
Denver, Colorado 80240

1186 FALLIS, N., BARNES, F. L., II, & DI FERRANTE, N. A case of polydystrophic dwarfism with urinary excretion of dermatan sulfate and heparan sulfate. *Journal of Clinical Endocrinology and Metabolism*, 28(1): 26-33, 1968.

The urinary excretion of acid mucopolysaccharides by a patient with polydystrophic dwarfism (mucopolysaccharidosis type VI) has been studied. The demonstration that both dermatan sulfate and heparan sulfate are present in the patient's urine suggests that this syndrome should not be considered as a derangement of the metabolism of dermatan sulfate alone. (33 refs.) - *Journal abstract.*

Baylor University College
of Medicine
Houston, Texas 77025

1187 BRONSKY, DAVID, KIAMKO, ROSARIO T., & WALDSTEIN, SHELDON S. Familial Idiopathic hypoparathyroidism. *Journal of Clinical Endocrinology and Metabolism*, 28(1):61-65, 1968.

A family is described in which 2 boys developed idiopathic hypoparathyroidism when 11 and 21 years old. An MR sister, who died when 19 years old, may also have had the disease. The remaining sibling, a brother age 30, and the parents are alive and well. Hypoparathyroidism in this family has apparently been transmitted by an autosomal recessive gene. This is the seventh family to be reported in which more than one member had idiopathic hypoparathyroidism and provides additional evidence that some cases of hypoparathyroidism are of genetic origin. In addition, the literature on familial idiopathic hypoparathyroidism and the classification of hypoparathyroidism are reviewed. (17 refs.) - *Journal abstract.*

Cook County Hospital
Chicago, Illinois

1188 MacGILLIVRAY, MARGARET H., ACETO, THOMAS, & FROHMAN, LAWRENCE A. Plasma growth hormone responses and growth retardation of hypothyroidism. *American Journal of Diseases of Children*, 115(2):273-276, 1968.

In 8 hypothyroid children, growth hormone (GH) response to insulin hypoglycemia and arginine stimulation prior to and during thyroid therapy was not an adequate index of GH production nor dependent on establishment of a euthyroid state. While thyroid hormone is essential for pituitary elaboration and peripheral utilization of GH, the hormonal interrelationships in normal growth processes remain to be defined. (12 refs.) - *D. Martin.*

219 Bryant Street
Buffalo, New York 14222

1189 Hyperthyroidism in the pregnant woman and the neonate (discussion). *Journal of Clinical Endocrinology and Metabolism*, 1637-1654, 1967.

A 28-year-old, pregnant woman with toxic goiter was treated with anti-thyroid drug therapy supplemented with triiodothyronine (T_3) and delivered a baby with a small goiter and a bone age of 32 weeks. She was maintained in a euthyroid state with propylthiouracil 0.5 gm 3-4 times daily and T_3 0.025 mg twice daily. A serum protein bound iodine was 11 μg/100 ml before delivery and 9 μg/100 ml at term delivery. The T_3 resin uptake was below normal, as is expected during pregnancy. A serum long-acting thyroid stimulator assay was mildly positive. The infant appeared euthyroid but had an enlarged thyroid. Thyroxine iodine and free thyroxine were in the lower limit of normal for adults. Although the mother's thyroid status had been maintained on the high side of normal, the infant had some degree of hypothyroidism. This opens the possibility that hyperthyroid mothers maintained on anti-thyroid drugs may give birth to infants whose central nervous systems may be exposed to risk of damage from hypothroidism. A review of placental transfer of thyroid and anti-thyroid compounds showed a discrepancy between fetal thyroid needs and the amount of thyroxine and T_3 that passes across the membrane. The therapeutic possibilities were discussed by a panel of experts with the majority favoring surgery. (40 refs.) - *R. Froelich.*

1190 KULIN, HOWARD E., KOHLER, PETER O., O'MALLEY, BERT W., & ODELL, WILLIAM D. Thyroid-stimulating hormone in thyroid dysgenesis. *Journal of Pediatrics*, 71(5):714-717, 1967.

Two patients with hypothyroidism and 1 patient with athyreosis had high levels of thyroid-stimulating hormone (TSH) which could be suppressed by thyroid replacement; this demonstrates normal responsiveness of the pituitary-thyroid axis and supports the view that TSH deficiency is not a cause of embryonic thyroid dysgenesis. TSH was measured by a recently developed radioimmunoassay. Both patients with hypothyroidism were males, had MR (IQ, 47) and had sublingual thyroids. One child was relatively normal until 2 years of age, when he clearly was mentally and developmentally retarded. By 10 years of age he was less than the third percentile for height and weight. The second child had a similar history except he had intermittently received thyroid replacement. The third child showed signs of hypothyroidism by 3 months of age and received sporadic thyroid replacement from 6 months of age. At age 6½ years, her MA was 2 years. TSH values before treatment ranged from 84 to 225 μU/ml. After treatment TSH values returned to normal (below 4.5 μU/ml). The ability of the pituitary to respond to varying levels of thyroxin was clearly shown. (18 refs.) - *R. Froelich.*

Harbor General Hospital
Torrance, California

1191 CUCOLO, GABRIEL F., & KAVAZES, JOHN PETER. Marfan's syndrome with rupture of spleen and cystic medionecrosis of splenic artery. *New York State Journal of Medicine*, 67(21):2863-2865, 1967.

A 34-year-old man with Marfan's syndrome was found to have a ruptured spleen and cystic medionecrosis of the splenic artery. The diagnosis of Marfan's syndrome was known before the acute abdominal episode. The S presented with dolichocephaly, an advanced cataract in 1 eye, an eye removed because of retinal detachment, pectus excavatum, and arachnodactyly. He had previously suffered a traumatic amputation of 2 fingers and had had an appendectomy. Three other members of the family also had Marfan's syndrome. At the age of 34 he developed the acute onset of severe epigastric pain and extreme distress. The possibility of a perforated peptic ulcer or an aortic rupture was entertained. An emergency exploratory laporotomy revealed a ruptured spleen for which a splenectomy was done. Ten days before the episode he had fallen in the street but had remained asymptomatic. Analysis of the removed spleen revealed a laceration, splenomegaly and medial cystic necrosis of the splenic artery. The post-operative course was complicated by thrombophlebitis of the right leg and precordial pain similar to angina. Involvement of the splenic artery is unusual in Marfan's syndrome. (3 refs.) - *R. Froelich.*

Lutheran Medical Center
Brooklyn, New York 11200

1192 ÖCKERMAN, P. A. A generalised storage disorder resembling Hurler's syndrome. *Lancet*, 2(7509):239-241, 1967.

A generalized storage disorder resembling Hurler's syndrome but involving mannose has been found in a male who died from infection

at age 4 years 4 months. Most mucopolysaccharidoses can be classified into 1 of 6 types, none of which could be applied to this patient. Psychomotor retardation, gargoyle facies, tall stature, hepatosplenomegaly, muscular hypotonia, abnormal bone structure, gibbus deformity, widely spaced teeth, cloudy areas in the lens capsule, hypogammaglobulinemia, and storage cells (including vacuolized lymphocytes) in the bone marrow were found. Compared to values in control Ss, the level of alpha-mannosidase was low in the liver, brain, and spleen. The levels of alpha-fucosidase, beta-galactosidase, N-acetylglucosaminidase, beta-glucuronidase, and acid phosphatase activity were higher than those of the controls. (12 refs.) - *W. Asher.*

University Hospital
Lund, Sweden

1193 SZABÓ, L., POLGÁR, J., VASS, Z., & JÓZSA, L. A Hurler's syndrome variant. *Lancet*, 2(7529):1314, 1967. (Letter)

Case material is presented on a 13½-year-old, 54½-inch, 72½-lb boy with symptoms and signs similar to those of the mucopolysaccharides except in the fundus, which showed rounded, sharply outlined, whitish changes scattered irregularly under the retinal veins. Although a new genotype is not postulated, the case is seen as a variant of Hurler's syndrome. (8 refs.) - *J. Snodgrass.*

Medical University
Budapest, Hungary

1194 PATERSON, PETER, PHILLIPS, LYN, & WOOD, CARL. Relationship between maternal and fetal blood glucose during labor. *American Journal of Obstetrics and Gynecology*, 98(7):938-945, 1967.

Tests conducted with 21 pregnant women demonstrated that glucose levels of maternal and fetal blood have a close relationship during labor. Fetal samples were obtained from the scalp through the partially dilated cervix. Of the 15 women given glucose during labor, 9 received 100 gm intravenously over 2 hours and 6 received 50 gm intravenously in 5 minutes. In patients not given a glucose load, the glucose concentration in the umbilical venous blood was not significantly greater than that in fetal blood. Both fetal and maternal blood sugar rose during the maternal infusion of 100 gm dextrose. The fetal blood glucose increased within 30 minutes after rapid intravenous injection of 50 gm dextrose. Both maternal and fetal levels returned to preinjection levels within 2 hours. A case of severe fetal hypoxia had the lowest fetal blood glucose level, which rapidly increased following maternal glucose infusion. After delivery, the neonates had a significant fall in blood glucose for 24 hours. An additional study of maternal and fetal acid-base status suggested that a maternal glucose load of 25 gm will not prevent fetal acidosis. (24 refs.) - *R. Froelich.*

Monash University Medical School
Queen Victoria Hospital
Melbourne, Australia

1195 DANCIS, J., & BALIS, M. E. Pathogenesis of retardation in errors of amino acid metabolism. *Pediatrics*, 40(1):141-142, 1967. (Letter)

In response to the questioned significance of *in vitro* demonstration of tyrosinase inhibition by phenylalanine in terms of high experimental levels, it is pointed out that the inhibition was competitive and the ratios were of the same order as seen *in vivo*. (2 refs.) - *J. Snodgrass.*

NYU School of Medicine
550 First Avenue
New York, New York 10016

1196 McKEAN, CHARLES M., & PETERSON, NEAL A. Influence of high circulating levels of amino acids on metabolism, cerebral electrical activity, and behavior. *California Mental Health Research Digest*, 5(4):238-239, 1967.

Phenylalanine loading of experimental animals has demonstrated a competitive inhibition of amino acid transport and impairment of cerebral synthesis of proteins and serotonin. Studies with infant or adult rodents or pigs have shown similar results. High blood concentrations of phenylalanine produced by injection or by feeding caused similar depletion of cerebral amino acids. Branched chain amino acids such as leucine, isoleucine, and valine were reduced by 25 to 50 percent. Phenylalanine loading reduced C^{14}-leucine incorporation into brain proteins by over 50 percent. Similar brain depletion of amino acids has been shown in human PKU patients

at autopsy. A 30 percent decrease of brain serotonin has been shown in the 5-day-old rat loaded with phenylalanine. No such change in norepinephrine levels was found despite a 30 percent decrease in brain tyrosine levels. When phenylalanine levels of PKU human brains (6 mg percent) were simulated in rats, a 20 percent inhibition of C^{14}-leucine incorporation into brain protein was found. One explanation for the maldevelopment of brain function in PKU is that altered protein metabolism occurs from an increase of phenylalanine in the brain. (No refs.) - *R. Froelich.*

Sonoma State Hospital
Sonoma, California 95476

1197 MILNE, M. D. Recent developments in the management and prognosis of some inborn errors of metabolism: The prognosis and management of renal tubular disorders. *Proceedings of the Royal Society of Medicine*, 60(11,I):1149-1152, 1967.

The treatment of renal tubular disorders is discussed in the light of recent advances in the understanding of these diseases. Specific disorders of amino-acid transport include cystinuria, Hartnup disease, and prolinuria. If a high fluid diet cannot be tolerated, the patient with cystinuria can be treated with D-penicillamine. About 25 percent of patients with Hartnup disease have some degree of mental subnormality, but treatment with nicotinamide supplements satisfactorily alleviates most of the other symptoms. Conditions associated with generalized tubular damage (Fanconi syndrome) involve many different substances, and treatment varies according to the etiology of the renal damage. The etiology of the Lignac-Fanconi syndrome (cystinosis) remains poorly understood and treatment is unsatisfactory. Proximal tubular disease from galactosemia responds to a lactose-free and galactose-free diet. A form of tubular damage occurs in infantile tyrosinosis, if the infant survives early childhood; this condition is improved by a low phenylalanine and tyrosine diet. Distal tubular syndromes include salt-losing renal lesions, renal tubular acidosis, and nephrogenic diabetes insipidus. Adequate alkalinization therapy allows a good prognosis for renal tubular acidosis. Satisfactory control of renal tubular disorders frequently depends on early diagnosis. (28 refs.) - *R. Froelich.*

Westminster Medical School
London, England

1198 ZAMENHOF, STEPHEN, VAN MARTHENS, EDITH, & MARGOLIS, FRANK L. DNA (cell number) and protein in neonatal brain: Alteration by maternal dietary protein restriction. *Science*, 160(3825):322-323, 1968.

Female rats were maintained on 8 or 27 percent protein diet by a pair-feeding schedule for 1 month before mating and throughout gestation. The brains of newborn rats from females on the 8 percent protein diet contained significantly less DNA and protein compared to the progeny of the females on the 27 percent diet. The data on DNA indicate that there are fewer cells; the protein content per cell was also lower. If, at birth, the brain cells are predominantly neurons, and their number becomes final at that time, then such dietary restriction may result in some permanent brain-neuron deficiency. This quantitative alteration in number as well as the qualitative one (protein per cell) may constitute a basis for the frequently reported impaired behavior of the offspring from protein-deprived mothers. (17 refs.) - *Journal abstract.*

University of California
School of Medicine
Los Angeles, California 90024

New Growthe

1199 PAULSON, GEORGE. Changing concepts of tuberous sclerosis. *Developmental Medicine and Child Neurology*, 9(4):493-494, 1967. (Annotation)

Genetic and biochemical studies of tuberous sclerosis are needed to clarify the pathogenesis of the disease. Long defined as a triad of epilepsy, adenoma sebaceum, and MR, tuberous sclerosis must now be regarded as a broader complex of these symptoms. Crucial questions include: determining the incidence of mild forme fruste cases, discovering the cause of tumorous growths in almost all organs, and investigating the variety of seizure patterns. (19 refs.) - *A. Clevenger.*

3957 Lytham Court
Columbus, Ohio 43210

1200 FESSARD, CLAUDE. Cerebral tumors in infancy: 66 clinicoanatomical case studies. *American Journal of Diseases of Children*, 115(3):302-308, 1968.

A clinicoanatomic review was conducted of 66 Ss who exhibited initial signs of cerebral tumors while under 2 years of age. Fifty-seven percent were supratentorial and 43 percent were posterior fossa tumors. Sensory and motor disturbances caused by the tumor were often attributed to MR and thus delayed the diagnosis. Hydrocephalus caused by tumor mass, edema, and spinal fluid blockage was common. Atypical seizures should indicate further investigation for tumors. Abnormal spinal fluid often delayed proper treatment by suggesting another diagnosis. Less than 1/4 of the Ss survived more than 1 year after treatment. Only 5 Ss (all with posterior fossa tumors) were considered normal after treatment; 23 others had moderate to severe neurological abnormalities. Glial tumors were most common (38 percent), followed by ependymomas (23 percent) and medulloblastomas (16.5 percent). Thirty percent of all tumors were malignant. Earlier recognition of cerebral tumors as the cause of atypical neurological findings in infants may improve prognosis. (16 refs.) - *W. A. Hammill.*

8 Rue de la Ronce
92 Ville d'Avray, France

1201 Localization of intracranial tumours. *British Medical Journal*, 4(5580):631-632, 1967.

Current diagnostic procedures can usually predict accurately the position and the pathological nature of an intracranial mass. Since the discovery of X-rays in 1895, such procedures as radiology of the skull, ventriculography, electroencephalography (EEG), and ultrasonics have been developed. Only in the last few years have these procedures been correlated to obtain maximum information with the least danger and the most economy. Four appropriate X-ray projections of the skull EEG, ultrasound, and a chest X-ray are usually routine procedures for evaluating adults before more elaborate procedures are used. About 1/2 of all intracranial tumors are gliomas, which usually infiltrate the brain in a haphazard way. Although the pattern of investigation will vary from patient to patient, isotope encephalography is frequently the next step in examination. Even with positive findings in 1 or more of the above tests, 1 or more of the more complicated tests will be necessary in the patient suspected of having a brain tumor. Arteriography has been favored because of a lower morbidity rate, but pneumography may be more useful in some cases despite increased danger. Positive contrast ventriculography is useful in outlining midbrain and posterior fossa masses. Despite all these refined methods, some very small tumors or large infiltrating gliomas can still defy detection. (7 refs.) - *R. Froelich.*

1202 BATTAGLIA, FREDERICK C., & WOOLEVER, C. ALLEN. Fetal and neonatal complications associated with recurrent chorioangiomas. *Pediatrics*, 41(1):62-66, 1968.

An 1,800 gm term infant who developed postnatal hyponatremia and hypoproteinemia was born to a mother whose placenta had chorioangiomas; these fetal findings may have to be listed as possible complications of the maternal condition. A previous pregnancy terminating in stillbirth was also complicated by maternal chorioangiomas. The surviving infant was born following induced labor and required incubation, resuscitation, and tracheal aspiration. Apgar scores at 1 minute and 5 minutes were 3 and 5, respectively. After 2 days of intravenous fluid therapy to correct the hyponatremia, pitting edema and indications of hypoproteinemia developed. This was corrected with intravenous salt-free albumin. The infant appeared to recover at 7 days and remains normal at 2 months. Family history was negative for other cases of vascular tumors. The low birth weight may be the result of intrauterine growth retardation due to placental insufficiency. Three cases of fetal edema immediately post-partum have been reported, but none had serum protein determinations. It is speculated that the hypoproteinemia may be due to sequestration of fetal plasma proteins within the interstitial spaces of the placenta. Since other abnormalities of intrauterine electrolyte and water balance are associated with chorioangiomas, the current case findings must be included among them. (14 refs.) - *E. Gaer.*

4200 East Ninth Avenue
Denver, Colorado 80220

1203 KATZ, HARVEY P., & ASKIN, JOHN. Multiple hemangiomata with thrombopenia: An unusual case with comments on steroid therapy. *American Journal of Diseases of Children*, 115(3):351-357, 1968.

A 13-year-old male MR with multiple hemangiomata, thrombopenia, and bleeding tendency responded initially to steroid therapy with an increase in platelet count and a decrease in size of the lesions. At birth he had a small hemangioma on the neck, and by age 8½ months multiple lesions were present over the entire body. Bleeding episodes included purpura, hematuria, and subcutaneous hemorrhage. Platelet count was variable but usually in the range of 15,000-60,000/cu mm. Because of a regression in the size of the lesions following a febrile illness with measles (at age 4 yrs), a trial of steroids (prednisone, 40 mg/day orally) was begun. This caused marked regression in number and size of the lesions and an increase in the platelets to 169,000/cu mm. Relapse occurred during reduction of steroid dosage, following which he became refractory to further steroid therapy. The mechanism of action of steroid therapy is unknown, but the endothelium of the vascular channels of the tumors may be a particularly sensitive action site. Steroid therapy deserves a trial in selected cases of multiple hemangiomata with thrombopenia and bleeding. (28 refs.) - *W. A. Hammill.*

University of California
Medical Center
San Francisco, California 94122

Unknown Prenatal Influence

1204 LAURENCE, K. M. Brain damage in hydrocephalic patients. *Proceedings of the Royal Society of Medicine*, 60(12): 1265-1266, 1967.

Seventy surviving cases of a series of 182 unoperated hydrocephalics whose condition was unassociated with spina bifida were analysed. The Ss had been tested in 1957 and 1958 and were re-evaluated in 1964. While the mean intelligence of the group had not changed in the interim, 15 Ss showed apparent improvement and 10 deteriorated. Several Ss with severe hydrocephalus had normal IQs and no physical handicaps. Others who appeared normal in most respects were unable to hold jobs and were not as competitive as normals; this suggests that brain damage might have occurred. It was concluded that: (1) brain damage may result from the pathology causing the hydrocephalus and cortical thinning may be a less potent cause of the deficit; (2) only severe brain damage seriously affected mental development; (3) many Ss showed overt or subtle damage, and some functioned below apparent capacities; and (4) the degree of hydrocephalus correlates negatively with intelligence and positively with spasticity, clumsiness, and ataxia. (3 refs.) - *J. Snodgrass.*

Welsh National School
of Medicine
Llandough Hospital
Penarth, Wales, Great Britain

1205 LORBER, J. Recovery of vision following prolonged blindness in children with hydrocephalus or following pyogenic meningitis. *Clinical Pediatrics*, 6(12):699-703, 1967.

Thirteen children with temporary blindness from hydrocephalus or pyogenic meningitis recovered their vision even after prolonged blindness; this indicates that undue pessimism about this problem is not justified and that appropriate therapy of the basic disorder should be continued despite blindness. Of the 5 children with hydrocephalus, blindness was due to severe unoperated hydrocephalus in 1, followed blockage of the shunt installed for treatment in 3, and occurred immediately after relief of the hycrocephalus in the other. The age at onset of blindness in these 5 children ranged from 29 weeks to 7 years. Eight children had blindness resulting from acute pyogenic meningitis. Three developed gross hydrocephalus from the meningitis, 3 were born with spina-bifida or lipoma of the cauda equina, and 2 developed meningitis from an existing shunt. All but 2 were less than 1 year of age. The 2 children with infected shunts had brief blindness, but the remaining 6 with meningitis had blindness from 5 weeks to 18 months. Twelve of the 13 children had normal fundi. A cautiously guarded good prognosis can be made as a result of these experiences. Even children with apparently complete optic atrophy can recover their vision. Children who appear

blind while they are unconscious were not considered in this study. (6 refs.) - *R. Froelich.*

Department of Child Health
University of Sheffield
Sheffield 10, England

1206 MOYES, PETER D. Hydrocephalus. *Canadian Medical Association Journal*, 98(7):354-358, 1968.

Early recognition of hydrocephalus is important in view of the improved results of modern treatment. Cerebrospinal fluid emerges from the ventricular system and enters the subarachnoid space for absorption. This continuous cycling may be altered by obstruction in the ventricular system and plugging of the absorptive channels producing "communicating" hydrocephalus. Hydrocephalus frequently follows meningomyelocele and causes abnormal enlargement of the head, enlargement and bulging of the anterior fontanelle, spreading of sutures, prominent scalp and facial veins, "setting-sun" appearance of the eyes, irritability, vomiting and failure to thrive. Investigation includes radiographs of the skull, subdural "taps" and ventriculography. In treatment, Sptiz-Holter and Pudenz-Heyer valves are most widely used to carry excess cerebrospinal fluid from the right lateral ventricle to the right atrium through tubing with a specially placed valve. Over a 9-year period at the Vancouver General Hospital, shunts were performed on 90 children with hydrocephalus. Twenty-one died as a result of bronchopneumonia, urinary tract infection, and meningitis; more than half are progressing well, many with normal intellectual function. In addition to the children operated on, 35 more children did not have shunts because their condition was too precarious, and 28 because the hydrocephalus was arrested. (9 refs.) - *Journal summary.*

Department of Surgery
University of British
Columbia
Vancouver, British
Columbia

1207 NETTLES, OLWEN R. Hydrocephalus, spina bifida and your child. *Rehabilitation*, 62(July-September):15-24, 1967.

The parental role in the management from infancy through adolescence of children with hydrocephalus and spina bifida deformities is outlined. Parents are encouraged to help the child live as normally as possible. Training the affected child proceeds in the normal muscular developmental sequence: awareness of surroundings, sitting, crawling, and walking. Physiotherapy of lower extremities is useful in preventing contractures, strengthening muscles, and improving circulation. Management of bowel and bladder incontinence secondary to spina bifida can be accomplished by use of urinal bags for boys and ileostomy for girls. At age 4 or 5, decisions concerning educational placement are made. Possibilities include normal schools, special schools for the physically and/or mentally handicapped, training centers, home teaching, and residential accommodation. A couple's chances of having a second affected child are about 10 or 12 percent. The Association for Spina Bifida and Hydrocephalus presents an opportunity for parents to discuss problems and share their knowledge. (No refs.) - *D. Martin.*

No address

1208 IVAN, LESLIE P., STRATFORD, JOSEPH G., GERRARD, JOHN W., & WEDER, CARMAN H. Surgical treatment of infantile hydrocephalus. *Canadian Medical Association Journal*, 98(7): 337-343, 1968.

Fifty-five children were treated surgically for progressive infantile hydrocephalus. The follow-up period ranged from 2 to 10 years. The overall results for the surgically treated patients were: 27 percent dead, 25 percent retarded, and 48 percent normal. In the earlier years some patients were not treated, either because they had meningomyelocele with paraplegia or because the cerebral mantle was very thin. During the last 4 years, all patients have been treated by operation because no correlation has been found between brain thickness and intelligence or between paraplegia and MR. Twenty-five patients had 42 complications. The rate of blocking fell greatly during the latter years of the study and infections (less than 11 percent) usually responded to prompt treatment. Apart from improvement in the tubes and valves, meticulous surgical technique combined with team effort and strict rules of follow-up were instrumental in achieving and maintaining good results. (13 refs.) - *Journal summary.*

Division of Neurosurgery
Ottawa General Hospital
Ottawa, Ontario

1209 MURTAGH, FREDERICK, & LEHMAN, RICHARD. Peritoneal shunts in the management of hydrocephalus. *Journal of the American Medical Association*, 202(11):1010-1114, 1967.

Peritoneal shunts were successful in the management of hydrocephalus in 40 of 53 patients. A total of 133 patients with hydrocephalus were evaluated, treated, and followed. The principle surgical treatment was the ventriculojugular shunt (Pudenz-Heyer type). Of the 53 peritoneal shunts used, 46 were from the lumbar subarachnoid space to the peritoneal cavity; 7 were ventriculoperitoneal shunts using a variation of the Pudenz-Heyer system. In 40 patients the peritoneal shunt was of definite value for up to 10 years. In 31 of these the peritoneal shunt was the sole mechanism used; 9 Ss experienced delayed failure of the shunt from 1 to 4 years after the original insertion. In 13 instances, the peritoneal shunt was considered a total failure. Nine of these had an insertion of another shunt; 6 were not helped and died. In the series there were 8 patients with postmeningitic hydrocephalus, 9 with posthemorrhagic hydrocephalus, 9 with complications from previously inserted ventriculojugular shunts, and 27 with idiopathic hydrocephalus. There were 2 operative deaths, both attributed to complications of wound infection. The peritoneal shunt proved very effective when used in patients with postmeningitic hydrocephalus or hydrocephalus secondary to intracranial hemorrhage; the long-term effectiveness was about 75 percent. This technique should be considered when only a temporary shunt is needed. Detailed technical aspects of the surgical procedure are presented. (6 refs.) - *R. Froelich.*

3401 North Broad Street
Philadelphia, Pennsylvania 19140

1210 STARK, GORDON D., & BAKER, GEOFFREY C. W. The neurological involvement of the lower limbs in myelomeningocele. *Developmental Medicine and Child Neurology*, 9(6): 732-744, 1967.

The neurological lesions which occur in the lower limbs of infants suffering from myelomeningocele are described. In a series of 30 consecutive newborn patients evidence of function in isolated distal spinal cord was found on the first examination in 50 percent and later in 66.6 percent. While there was a tendency for reflex function to diminish, rapid deterioration of 'voluntary' function was exceptional. The clinical and pathogenetic significance of these findings is discussed. (18 refs.) - *Journal summary.*

9 Clerwood View
Edinburgh 9, Scotland
Great Britain

1211 JAMES, C. C. MICHAEL, & *LASSMAN, L. P. Results of treatment of progressive lesions in spina bifida occulta five to ten years after laminectomy. *Lancet*, 2(7529): 1277-1279, 1967.

A follow-up from 5 to 10 years of 40 patients treated by laminectomy for increasing neurological changes associated with spina bifida occulta is reported. The purpose of surgery has been to prevent further deterioration. Seventeen patients have improved and in a further 6 there is a possibility of some minor degree of improvement, 1 case has deteriorated subsequently, and the remainder are unchanged. Criteria for laminectomy were abnormality of gait associated with progressive neurological deficit or incontinence, X-ray evidence of a laminal deficit of a greater degree than only of the first sacral neural arch, and myelographic evidence of abnormality or of a low-placed conus medullaris. Among the causes for the neurological changes were found diastematomyelia, intramedullary dermoid, cauda equina adhesions, ectopic dorsal nerve roots, and subcutaneous lumbosacral lipoma with a deep connection. It is dangerous to remove the subcutaneous lipoma related to a spina bifida unless the surgeon is prepared to explore the cauda equina at the same time. (6 refs.) - *Journal abstract.*

*Newcastle General Hospital
Newcastle upon Tyne 4, England

1212 HALL, B., & DAHLQVIST, A. Enzyme activity in De Lange's syndrome. *Lancet*, 2(7529):1311, 1967. (Letter)

Blood galactose-1-phosphate uridyl transferase (GPUT) activity was measured in 2 institutionalized patients with Cornelia de Lange's syndrome. The patients showed morphologically normal chromosomes, MR, microcephaly, short stature, and characteristic facies. The 11-year-old S had a simian crease and only one flexion crease on the fifth finger. The 27-year-old S had clinodactyly. The fact that high GPUT levels were found supports the suggestion that the De

Lange syndrome is caused by a chromosome aberration. (5 refs.) - *J. Snodgrass.*

Institute of Genetics
University of Lund
Lund, Sweden

1213 HOOFT, C., DE HAUWERE, R., & VAN ACKER, K. J. Familial non-congenital microcephaly, peculiar appearance, mental and motor retardation, progressive evolution to spasticity and choreo-athetosis. *Helvetica Paediatrica Acta*, 23(1):1-12, 1968.

In three siblings the association of microcephaly, peculiar appearance, mental and motor retardation and neurologic symptoms was observed. The head circumference, which was normal at birth, remained practically unchanged in the course of the following years. The psychomotor development was retarded very early. The same neurologic symptoms developed progressively in the three children. The first symptom was the hypotonicity. Later, progressive spasticity and choreo-athetotic movement developed. The EEG was abnormal in two children and 1 boy had bilateral optic atrophy. A brain biopsy revealed progressive non-metachromatic degeneration of the white matter. Extensive biochemical investigations remained without results. The three children also showed a constant slight proteinuria, but normal kidney function tests and normal renal histology. The relation of this syndrome to other similar syndromes is discussed. (8 refs.) - *Journal summary.*

Pediatric Clinic
State University of Gent
Gent, Belgium

1214 MENKES, JOHN H., PHILLIPPART, MICHEL, & CLARK, DAVID B. Hereditary partial agenesis of the corpus callosum: Biochemical and pathological studies. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 9, p. 126-146.

A genetic form of agenesis of the corpus callosum, which manifested itself by SMR and intractable seizures due to a localized arrest in neural development, was transmitted in a sex-linked recessive manner to 5 male infants in a family. The pattern of inheritance appears to involve transmission through apparently normal mothers. Five of 9 male children, the offspring of 3 of 6 possible carriers in the family, were affected. Neuropathological findings in 1 case included: almost complete absence of the corpus callosum, micropolygyria, heterotopias of gray matter, and absence of the longitudinal callosal bundle. A neurochemical analysis revealed that lipid content, particularly cholesterol and cerebroside fractions, was decreased. Cerebroside composition studies indicated the presence of an unusually small amount of nonhydroxic fatty acids as well as deviant distribution patterns for both nonhydroxy and hydroxy acid. These chemical abnormalities suggest that the etiological explanation of this defect may lie in a profound disturbance of local metabolism rather than in a single enzymatic defect. (25 refs.) - *J. K. Wyatt.*

1215 LYNCH, JOHN I., PERRY, LOWELL W., TAKAKUWA, TOSHIO, & SCOTT, LEWIS P. Congenital heart disease and chondroectodermal dysplasia. *American Journal of Diseases of Children*, 115(1):80-87, 1968.

Two infants with chondroectodermal dysplasia (Ellis-Van Creveld syndrome) were found to have associated congenital heart disease. One infant was Negro, which was remarkable since only 1 of the 103 reported cases was Negro. Although MR has been reported as a manifestation of the syndrome, neither of these infants demonstrated MR. The clinical features included chondrodysplasia, polydactyly, and ectodermal defects of the hair, teeth, and nails. The Negro male had a single atrium and a mitral valve deformity. The white girl had a complete atrioventricular canal, patent ductus arterosis, and coarctation of the aorta. She died at 4½ weeks of age. Of the reported cases, 16 have been shown to have cardiac malformations by cardiac catheterization or autopsy. A defect of an endocardial cushion was reported in 13 cases. The most common lesion was a single atrium. Other anomalies occasionally found in this syndrome but not found in these 2 infants are male genital abnormalities, cleft palate or lip, strabismus, cataract, coloboma of the iris, talipes calcaneovalgus, and talipes equinovarus. Chondroectodermal dysplasia is an autosomal recessive syndrome that may be related to the mucopolysaccharidoses. There probably was a normal amount of mucopolysaccharides in the urine of the 2 reported cases. (21 refs.) - *R. Froelich.*

U. S. Naval Hospital
National Naval Medical
Center
Bethesda, Maryland 20014

1216 CALDWELL, E. E., ANTHONY, JAMES A., BROWN, HELENA P., & CRUMP, E. PERRY. The Treacher Collins syndrome: Report of studies of an affected Negro infant, and survey of the literature. *Clinical Pediatrics*, 6(12):715-720, 1967.

A 3-day-old premature Negro female infant with Treacher Collins syndrome represents the first known "complete" case of this disorder in a Negroid population; this indicates that the syndrome occurs in all major ethnic groups and probably is more common than has been reported in the pediatric literature. The characteristics of the syndrome are: (1) antimongoloid palpebral fissures with coloboma of the lower lids and absence of medial eyelashes; (2) hypoplasia of the facial bones; (3) malformation of the external ear; (4) macrostomia, high arched palate, and malocclusion; (5) blind fistulae and fusion angles of the mouth and ears; (6) atypical hair growth; and (7) other anomalies such as skeletal defects or facial clefts. The Negro infant manifested all of the major characteristics of Treacher Collins syndrome. Her family history was devoid of evidence of the abnormality, and chromosomal studies showed a normal karyotype. Because of the many variations of signs and symptoms in the Treacher Collins syndrome, an accurate incidence of the syndrome is difficult to determine. Despite its evidence at birth, few cases have been reported. The best explanation of the pathogenesis of this disorder is McKenzies' vascular hypothesis. (26 refs.) - *R. Froelich.*

Department of Pediatrics
Meharry Medical College
Nashville, Tennessee 37208

Unknown or Psychogenic Cause with Reaction Manifest

1217 McKHANN, GUY M., MOSER, ANN B., & MOSER, HUGO W. Metachromatic leucodystrophy and sulfatide metabolism. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 7, p. 103-118.

Comparative biochemical studies of the metabolism of S^{35}-sulfate in 4 patients with metachromatic leucodystrophy (MLD) and 3 control patients suggest that the metabolic error in MLD may be a defect in sulfatide metabolism. Urine and bile serial analyses performed on all patients after injections of 500 C of S^{35}-sodium sulfate revealed that for MLD patients most of the radioactivity in the total lipids was present in the sulfatides and that peak specific activity of urine lipids occurred a week or more after the isotopic injection. The degradation of kidney sulfatides in the MLD patients occurred at a much slower rate than has been found in experimental animals. (27 refs.) - *J. K. Wyatt.*

1218 SUZUKI, KUNIHIKO, SUZUKI, KINUKO, & CHEN, GLORIA C. Isolation and chemical characterization of metachromatic granules from a brain with metachromatic leukodystrophy. *Journal of Neuropathology and Experimental Neurology*, 26(4):537-550, 1967.

Isolation, purification, and chemical analysis of the granules found in the brain in metachromatic leukodystrophy (MLD) revealed a galactoside of high sulfatide content. The isolation procedure was similar to that for the membranous cytoplasmic bodies (MCB) of Tay-Sachs disease (freezing, ultra centrifuging, and sucrose gradient centrifuging). Chemical analysis consisted of chloroform-methanol separation and determination of cholesterol, phospholipid, ganglioside, and total lipid hexose concentration. Purity was estimated at more than 95 percent. The high content of chloroform-methanol insoluble residue differs from the MCB of Tay-Sachs disease. The molar ratio of cholesterol:galactolipids:phosphatides was 1:1:1. The complex preparation procedure prevented ultrastructural analysis by electron microscopy. The granule of MLD is probably a laminated membranous structure and is most likely of lysosomal origin. (30 refs.) - *W. A. Hammill.*

Albert Einstein College
of Medicine
New York, New York

1219 GREENE, HARRY, HUG, GEORGE, & SCHUBERT, WILLIAM K. Arylsulfatase A in the urine and metachromatic leukodystrophy. *Journal of Pediatrics*, 71(5):709-711, 1967.

Measurement of arylsulfatase A activity (ASA) by the rapid sulfatase test permitted the presumptive diagnosis of metachromatic leukodystrophy (MLD) in a S 6 months before neurologic symptoms were observed and 9 months before metachromatic granules were seen in the urine or a sural nerve biopsy. Urinary ASA was determined at intervals from 6 to 16 months of age in a sibling of a known MLD S.

He developed normally to 12 months when he became hypotonic. Bilateral gluteal and quadriceps muscle weakness with hyperextension of the knees occurred at 14 months with complete cessation of walking occurring at 16 months. At no time before 16 months did the urine show ASA or metachromatic granules. Non-MLD controls (2 under 1 month of age) consistently had a 2+ to 4+ positive reaction to the rapid sulfatase test. Intracellular, metachromatic granules in the urine sediment and granules in a sural nerve biopsy were demonstrated in the S at 16 months. Liver, muscle, and rectal biopsy revealed the range of sulfatase activity within 0 to 100 units at this time. The rapid sulfatase test is a reliable aid in diagnosing MLD at any age. (6 refs.) - *A. C. Molnar.*

The Children's Hospital
240 Bethesda Avenue
Cincinnati, Ohio 45229

1220 MOSER, HUGO W., MOSER, ANN B., & McKHANN, GUY M. The dynamics of a lipidosis. *Archives of Neurology*, 17(5): 494-511, 1967.

Measurement of sodium sulfate (Na_2SO_4) S-35 incorporation into sulfatide, steroid sulfate, and polysaccharides in 6 Ss with metachromatic leukodystrophy (MLD) and 10 controls suffering from various diseases indicated that sulfatide accumulation in MLD results from deficient degradation with normal metabolism. The isotope was injected intramuscularly and intravenously, and urines were collected for qualitative and quantitative analyses of the labelled metabolites. Sulfatide specific activity in tissues was quantitated from postmortem studies of 3 MLD Ss. Mean values for urinary inorganic sulfate, polysaccharide sulfate, and bile lipid incorporation were the same for control and MLD Ss. Eighty to 90 percent of the radioactivity in the bile lipids was incorporated in cholesterol sulfate, as was 90 percent of the radioactivity in plasma and red and white cell lipid. Total lipid activity peaked within 3 days and was barely measurable in controls after 2 to 3 weeks. The same early level was reached by MLD Ss, but peak levels occurred at 25 to 30 days and were detectable for over 4 months. Urinary sulfatide activity peaked at 2 to 3 days in controls and at 22 to 28 days in MLD Ss. There was evidence for separate metabolic compartments occurring in separate organs and in the kidney itself. The sulfatide specific activity was greater in postmortem MLD kidneys than in the livers and cerebral white matter. In the kidney itself at least 2 compartments were found. One showed a half life of 15 to 33 days; the other was longer but undetermined. The total amount of sulfatide in the kidney of a 3-year-old MLD S revealed an 0.3 mg/day accumulation as opposed to the normal 6 mg/day. Although some sulfatide degradation does occur in MLD, it is markedly decreased. Therapy may consist of decreasing the normal sulfatide synthesis and increasing the sulfatide degradation. (47 refs.) - *A. C. Molnar.*

Massachusetts General Hospital
1811 Fruit Street
Boston, Massachusetts 02114

1221 MIYOSHI, KAZUO, SAIJO, KAZUO, KURYU, YOJIRO, OSHIMA, YASUO, NAKANO, MASUHIRO, & KAWAI, HISAOMI. Myoglobin subfractions: Abnormality in Duchenne type of progressive muscular dystrophy. *Science*, 159(3816):736-737, 1968.

Human metmyoglobin was separated electrophoretically into 4 subfractions: Mb_1, Mb_2, Mb_3, and Mb_4, which divide into at least 2 biochemically independent groups: Mb_1 and Mb_2, and Mb_3 and Mb_4. In normal Ss, Mb_1 constituted the predominant component; Mb_2, Mb_3, and Mb_4 were the minor components in this descending order. In the Duchenne type of progressive muscular dystrophy, on the contrary, a remarkable decrease in Mb_1 and a concomitant increase in Mb_3 were observed. This unique abnormality in the relative distribution of myoglobin subfractions was recognized only in the Duchenne type and not in other types of progressive muscular dystrophy or in other myopathies. (7 refs.) - *Journal abstract.*

School of Medicine
Tokushima University
Tokushima, Japan

1222 RAMPINI, S., & CLAUSEN, J. Farbersche Krankheit (disseminierte Lipogranulomatose) Klinisches Bild und Zusammenfassung der chemischen Befunde. (Farber's disease (disseminated lipogranulomatosis): Clinical features and summary of the chemical report.) *Helvetica Paediatrica Acta*, 22(6):500-515, 1967.

A case of Farber's disease and its course are reported. The results of chemical investigations are summarized. The patient presented first with transitory edema of the extremities. At age 2 months feedings were refused

and vomiting occurred, followed by hoarseness, swelling of the articulations and contractures. At age 2½ months internal hydrocephalus and hepatosplenomegaly, subsequently a systolic murmur were detected. At 5 months aphonia, dilatation of the heart and dyspnea, at 6 months subcutaneous nodules were observed. The patient expired at the age of 7 months from respiratory and heart failure. Clinically, the course was very progredient and characterized by a severe disturbance of the general condition and the psychomotor development. Chemical determinations revealed an increased concentration of mucopolysaccharides in the brain and in the kidneys. A particular glycolipid was found in the liver, the renal cortex and probably also in the brain. Galactosamine, a hexosamine, is contained in the mucopolysaccharide as well as in the glycolipid detected in several organs of our patient. A genetically determined disturbance of hexosaminidase, the enzyme, which liberates galactosamine, might also be considered as a possible metabolic defect in Farber's disease. (43 refs.) - *Journal summary.*

Universitätskinderklinik
ZÜrich
Zürich, Switzerland

1223 McDONALD, ALISON. *Children of Very Low Birth Birth Weight*. London, England, William Heinemann Medical Books, 1967, 124 p. $4.00.

Clinical and psychological data on 1,128 children (birthweight < 1,800 gm) born between 1951 and 1953 were analyzed to determine their development and prognosis and to identify the etiology of cerebral palsy. Thirty percent were multiple births. More than a third of the "small for date" children had a pregnancy history of toxemia or hypertension. Follow-up data obtained when the Ss were 6 to 8 years old revealed that 28 Ss had died and many of the others had severe motor and mental defects. Of single surviving children, 13.6 percent had either cerebral palsy, blindness, deafness, or MR (IQ < 50). The mean IQ (Revised Stanford-Binet given to 95 percent of the Ss) was 98.4, which is below the expected mean in Britain (103). Ss with cerebral palsy, blindness, and deafness were not included in the intelligence evaluations. Three-fourths of the children with IQ < 50 and 2/5 of those with scores between 50 and 69 had a gross physical abnormality. Ss with IQ < 70, excluding cerebral palsied and mongoloid Ss, tended to be "small for date" children. There was no correlation between IQ and factors which lead to oxygen deprivation around the time of birth. Retrolental fibroplasia was found in 3.7 percent, myopia in 3.2 percent, cataracts in 1.0 percent, and perceptive deafness of a moderate or severe degree in 1.8 percent. The incidence of seizures in the study group was higher than the incidence in the general population. A genetic or early intrauterine origin of seizures is suggested. (168 refs.) - *R. Froelich.*

CONTENTS: Description of the Survey; Perinatal History of the Children Studied; Clinical Findings at Follow Up; Cerebral Palsy; Intelligence; Eye Defects; Deafness; Fits; Conclusions.

1224 WINTER, S. T. Follow up studies on premature infants. *Clinical Pediatries*, 6(10):561-562, 1967.

Instead of being limited to complications of pregnancy and delivery, the etiology of defects in prematures lies also in factors of maternal physiology, intrauterine environment, genetic constitution of the fetus, and later familial stress. This is the central theme of comprehensive research in Edinburgh which has followed a random sample of 381 prematures and 214 mature controls for 4 to 7 years. "Data were obtained during the preschool period by regular home-visitation and by physical examinations, medical histories, and developmental testing; during the school period IQ testing and behavior assessments were conducted." Interplay was noticed between several factors, e.g., the effect of certain environmental and genetic factors on a premature child's growth. In the preschool period, mean developmental quotients fell steadily with decreasing birthweight and with lower social grade of the mother. At school, most of the prematures with a birthweight of 4½ lb or less were dull, retarded, and defective, especially where additional adverse social factors existed. In contrast to those of comparable birthweight but without handicaps, there were no excessive obstetrical complications among children with mental or gross neurologic deficits. "Disturbed behavior, however, was related to prenatal conditions predisposing to fetal hypoxia, traumatic delivery, and environmental stress." (3 refs.) - *C. M. N. Mehrotra.*

Pediatric Department
Rothschild Municipal
Hospital
Haifa, Israel

1225 CHURCH, SUE CAROL, MORGAN, BEVERLY C., OLIVER, THOMAS K., JR., & GUNTHEROTH, WARREN G. Cardiac arrhythmias in premature infants: An indication of autonomic immaturity? *Journal of Pediatrics*, 71(4):542-546, 1967.

Electrocardiograms (ECG) on 30 healthy premature infants (13 males, 17 females with birthweights under 1,500 gm) demonstrated a sinus arrhythmia in all infants and marked arrhythmias in 90 percent. ECGs were taken for 6-12 hours by means of a slow-speed tape recorder. The average heart rate was 147/min. Sudden onset of sinus bradycardia (90 beats/min or less) occurred in 27 infants. Of these, 18 showed nodal escape. Of those with nodal escape, 4 had premature atrial or ventricle contractions, 2 had sinus arrest for up to 2 seconds, and 1 had varying atrio-ventricular block. Extrasystoles were found in 6 infants. Eighty-three percent of the arrhythmias occurred during drowsiness or deep sleep. Of those arrhythmias that occurred following autonomic stimuli, 91 percent followed gastrointestional stimulation. There was a definite decrease of arrhythmias with increasing age and weight. Except for 1 with blindness from retrolental fibroplasia and 1 who died of sepsis at 17 days of age, all infants observed for a 6 to 12-month follow-up have done well. It was postulated that the immature autonomic nervous system present in premature infants may be responsible for arrhythmias and perhaps for other disturbances such as sudden death in infancy. (27 refs.) - *R. Froelich.*

University of Washington
School of Medicine
Seattle, Washington 98105

1226 GRAY, O. P., ACKERMAN, ANN, & FRASER, ANNE J. Intracranial haemorrhage and clotting defects in low-birth-weight infants. *Lancet*, 1(7542):545-548, 1968.

The clotting state of 286 low-birth-weight infants on the first day of life has been investigated using the 'Thrombotest'. The incidence of intracranial hemorrhage noted at necropsy is about 3 times greater when the infant has a thrombotest less than 10 percent than when it is over 10 percent. Treatment of infants with low thrombotests by fresh frozen plasma or fresh blood lessens the risk of death with intracranial hemorrhage. Vitamin K_1 sometimes raises the thrombotest result to satisfactory levels within 24 hours but cannot be relied upon to do so. Factors which are more commonly associated with a low thrombotest are intrapartum hypoxia, wasting of the infant, and a blood-glucose of less than 20 mg/100 ml. (13 refs.) - *Journal abstract.*

Maternity Hospital
Glossop Terrace
Cardiff CF2 1XF, Wales
Great Britain

1227 CRICHTON, J. U. Infantile spasms in children of low birthweight. *Developmental Medicine and Child Neurology*, 10(1): 36-41, 1968.

In a retrospective study of 242 children with infantile spasms 31 were found to have a birthweight below the tenth percentile for the length of gestation and of these 26 (84 percent) were of the secondary variety. Of these 26 infants, 16 had developed a serious convulsive disorder 1 to 5 days after birth. Only 3 similar cases were encountered in the other 211 children. By comparing these figures with the numbers of premature and "small for dates" (SFD) infants in the general population, it is concluded that SFD infants are 3 times as likely to develop infantile spasms as true prematures weighing less than 2,500 g. (19 refs.) - *Journal summary.*

Department of Pediatrics
University of British Columbia
Vancouver, British Columbia
Canada

1228 BRENT, ROBERT L., & JENSH, RONALD P. Intra-uterine growth retardation. In: Woollam, D. H. M., ed. *Advances in Teratology: Volume Two.* New York, New York, Academic Press, 1967, Chapter 5, p. 139-227.

Although the incidence is high (1 in 500 in full-term newborns) and an unquestionable interrelationship with teratogenesis exists, data on intra-uterine growth retardation

(IUGR) are only recently accumulating. IUGR describes infants that have failed to maintain their expected growth potential. They weigh less than 2,500 gm at 38 weeks of gestation and less than 2,050 gm at 36. Genetic control of intra-uterine growth resides in many chromosomes, and IUGR is associated with simple mendelian transmission, translocation, and cytogenetic defects. Irradiation appears to cause IUGR by a direct effect on the embryo during or after the period of differentiation. Drugs causing IUGR act with or without teratogenic effects. Clinical malformations including progeria and progeroid syndromes, bird-headed dwarfism, Silver and Russell dwarfs, leprechaunism, and monstrosities have IUGR as a major criterion, but its relationship to other malformation syndromes is uncertain. Teratogenic infections such as congenital syphilis, toxoplasmosis, rubella, and cytomegalic inclusion disease clearly produce IUGR. Diabetes, hypoxia, placental dysfunction, nutrition, toxemia of pregnancy, preeclampsia, maternal factors (size, stature, age, parity, race, socioeconomic class, prenatal care, smoking, season, temperature, daylight, climate, heart volume), multiple births, uterine blood supply, uterine position, length of gestation and postmaturity have all been found to affect fetal growth rate. For prognostic purposes, the etiological factors causing low birth weight can be divided into: (1) infants with prematurity, (2) infants with IUGR, and (3) infants with prematurity and IUGR. IUGR infants generally have the poorest postpartum prognosis, though there is great variability within the individual categories. Additional information will be forthcoming if the growth status of a newborn is considered a 'vital sign' to be recorded with birthweight, pulse, and blood pressure. (443 refs.) - *A. C. Molnar.*

1229 LEONBERG, STANLEY C., & BOK, JOHN B. Childhood schizophrenia; organic or psychogenic? *Diseases of the Nervous System*, 28(10):686-687, 1967.

The case of a 20-year-old man with schizophrenia from childhood and signs of organic brain damage illustrates the interaction of organic and psychogenic factors in childhood schizophrenia. He had respiratory distress on the first day of life, possible encephalitis at 1½ years of age, and several generalized convulsions. At 2½ years of age, he began showing bizarre behavior and regression of speech. During childhood he experienced repeated psychic trauma. One hand was restrained for 2 years because of a diagnosis of mixed dominance. At 20 years of age he was extremely disturbed, uncommunicative, poorly coordinated, and appeared to be MR. A pneumoencephalogram showed moderate ventricular dilatation. Psychological testing revealed that he had normal intelligence. The elective mutism in this patient may be called "adextrous apraxia." Although a clear organic etiology for schizophrenia has never been found and a number of uncertainties and disagreements about the relationship between organic and psychogenic factors exist, this case supports the view that schizophrenia has an organic basis. (14 refs.) - *R. Froelich.*

The Pennsylvania Hospital
Philadelphia, Pennsylvania

1230 MENOLASCINO, FRANK J., & EATON, LOUISE. Psychoses of childhood: A five year follow-up study of experiences in a mental retardation clinic. *American Journal of Mental Deficiency*, 72(3):370-380, 1967.

A 5-year follow-up study on 29 of 32 psychotic children originally suspected of being MR revealed no correlation between the type of interim treatment and prognosis. The original group consisted of 22 boys and 10 girls all of whom were under age 8 (mean age, 4 yrs 8 mos) at the time of initial evaulation. Diagnostic categories represented in the follow-up study were 22 cases of chronic brain syndrome with psychosis, 5 cases of childhood schizophrenia, and 2 cases of early infantile autism. Original treatment decisions were made by a multidisciplinary team and were based on the degree of the child's emotional disturbance and on parent cooperation rather than on specific clinical findings. Treatment categories were: intensive treatment, moderate treatment, and no treatment. Follow-up assessment procedures included an interim history (physical, neurological, and laboratory studies), observations of behavior, and psychological tests. Original diagnoses of 12 cases of childhood schizophrenia and 1 case of early infantile autism were changed to chronic brain syndrome with psychosis primarily because of increased neurological findings. Forty-two percent of the children originally diagnosed as having chronic brain syndrome with psychosis experienced a change in neurological status during the follow-up period. Psychological

tests appeared to be of limited value. Children with severe language retardation whose early findings suggested higher potential were functioning in the SMR range 5 years later; 7 out of 8 children whose original testing was in the moderately retarded range had later test scores in the SMR range. Test-retest findings were consistent only for those in the mildly retarded and low normal groups. (22 refs.) - *J. K. Wyatt.*

University of Nebraska
College of Medicine
602 South 44th Avenue
Omaha, Nebraska 68105

1231 CLEMMENS, RAYMOND L., & GLASER, KURT. Specific learning disabilities: I. Medical aspects. *Clinical Pediatrics*, 6(8): 481-486, 1967.

The physician is frequently called upon to assess subtle neurologic impairment in its relation to specific learning disabilities. Such disabilities include those persistent problems of academic achievement which are associated with demonstrable or presumed neurological dysfunction in children whose overall intellectual capacity may be otherwise adequate. Two main categories of neuroanatomic and neurophysiologic disorders must be considered with the more obvious factors of intellectual subnormality, cultural deprivation, psychiatric disturbance, and hearing or visual difficulties. Hyperactivity (hyperkinesis) and distractibility are the most prominent features of the first category - minimal brain damage. Those in the second category, developmental learning disorders, have particular difficulty in learning the conventional meaning of symbols. This phenomenon, which often may be associated with dysgraphia, varies in magnitude and duration. Diagnosis may be established from several factors: a history of reading or writing difficulty; abnormal EEG; failure at word recognition tests; and history of perinatal, prenatal or post natal neurological insults. Physiological profile testing should be performed and careful appraisal made of equivocal neurological signs. The physician frequently will find it desirable to request opinions from consultants such as psychologists, psychiatrists, educators, and language specialists. (6 refs.) - *W. Asher.*

University Hospital
Baltimore, Maryland 21201

Convulsive Disorders

1232 LIVINGSTON, SAMUEL. *Drug Therapy for Epilepsy*. Springfield, Illinois, Charles C. Thomas, 1966, 234 p. $9.50.

The recent increase in the number of effective anticonvulsant drugs available for epilepsy therapy makes effective seizure-control a possibility for all persons with epilepsy. Currently used anticonvulsant drugs are classified, discussed, and evaluated on the basis of follow-up studies over a 30-year period on approximately 16,000 patients. Detailed methods for the prevention, detection, and management of side-effects are outlined. The provision of strict supervision and preventive measures when therapy requires the use of "risk" drugs can forestall many fatalities. A short table delineates the major types of epileptic seizures. A special section on hypoglycemia includes data on diagnosis, treatment, and on the different characteristics apparent in hypoglycemic and epileptic convulsions. This clinically-oriented book is intended primarily to extend the repertoire of drugs employed by doctors who undertake drug therapy to control epilepsy. (605 refs.) - *J. K. Wyatt.*

CONTENTS: Anticonvulsant Drugs; Prevention, Detection and Management of Untoward Reactions of Anticonvulsant Drugs; Treatment of Hypoglycemia (Drash).

1233 TAKEI, HIROSHI, ASAKA, AKIO, TAKEMURA, SHINGI, & INOUYE, EIJI. Sex chromosomes of Japanese epileptics. *Lancet*, 1 (7540):478, 1968. (Letter)

When 341 males and 209 females with a history of epileptic seizures were screened for sex chromatin, it was found that 1 male was sex-chromatin positive and 2 females had double sex chromatin. The karyotypes were 47/XXY for the male and 47/XXX for the females. Both of the females were MR. (No refs.) - *A. Huffer.*

University of Tokyo
School of Medicine
Tokyo, Japan

311-967 O - 68 - 5

Genetic Disorders

1234 LEJEUNE, JEROME. Mental and physical deficiency related to a partial deletion of the short arm of chromosome 5. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr., Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 4, p. 48-57.

An investigation of 6 cases possessing consistent clinical, dermatoglyphic, and chromosomal data has lead to the identification of a new syndrome called the *cri du chat* syndrome. The distinctive karyotypic feature of this syndrome is a loss of a part of the short arm of one of the chromosomes of the B group, probably No. 5. All cases were SMR, physically retarded, hypotrophic, and emitted a special *cri du chat* cry. Distinguishing physical features included: microcephaly, hypertelorism, slanting eyes, low set ears, small chin, flat nose, and epicanthus. Palmprints showed an axial triradius in the t' position and a transversal crease. (14 refs.) - *J. K. Wyatt.*

1235 GORDON, R. R., & COOKE, PATRICIA. Facial appearance in *cri du chat* syndrome. *Developmental Medicine and Child Neurology*, 10(1):69-76, 1968.

Six cases of proven *cri du chat* syndrome are compared clinically. The difficulties in distinguishing the characteristic facial appearance became greater with age. Since the characteristic cry also becomes less marked after the age of a year it is emphasized that the clinical diagnosis is most easily made in the first 6 months of life. (35 refs.) - *Journal summary.*

Sheffield Centre for Human Genetics
Manchester Road
Sheffield 10, England

1236 McGavin, D. D. M., Cant, J. Stanley, Ferguson-Smith, M. A., & Ellis, Patricia M. The cri-du-chat syndrome with an apparently normal karyotype. *Lancet*, 2 (7511):326-330, 1967.

Except for the presence of normal karyotype, an 18-month-old female child admitted for dacryocystitis had all the characteristics of the cri-du-chat syndrome. The patient was born after 43 weeks gestation and normal labor; birthweight was 4 pounds, 4 ounces and the Apgar score was 3. She had a "gunbarrel" perineum with an anteriorly situated, narrow ectopic anus and high-arched, intact palate. Ophthalmic examination revealed a 30 degree right convergent strabismus and bilateral megalocornea with corneal diameters of 12.5mm in the right eye and 12.75mm in the left eye. Family history disclosed no congenital malformations in first-degree relatives. Chromosome analysis revealed a normal female with a few satellites on the short arm of one homologue of chromosome 17. The possibility exists that this patient is a mosaic with 2 cell lines - 1 normal and the other carrying the deletion of a 4-5 chromosome. An alternative explanation is that a submicroscopic deletion of chromosome 4-5 is present. Fifty children with multiple congenital abnormalities associated with a large hemizygous deletion of the short arm of chromosome 4-5 have been described since 1963. The majority of cases have shown severe physical and mental retardation, hypertelorism, epicanthal folds, microcephaly, low-set ears, and a catlike cry. Review of these cases indicates that a preponderence of females are affected, but no predisposing factors such as maternal age or X-ray exposure are evident. (48 refs.) - *W. Asher.*

University of Glasgow
Glasgow, Scotland

1237 BUTLER, L. J., FRANCE, N. E., & JACOBY, N. M. An infant with multiple congenital anomalies and a ring chromosome in group C (X-6-12). *Journal of Medical Genetics*, 4(4):295-298, 1967.

A newborn female infant with multiple anomalies had a group C ring chromosome (X-6-12). She weighed 2,605 gm at birth, failed to gain weight, and died at 5 months of age. She demonstrated an unusual facies, low hair line, webbing of the neck, low-set ears, hirsutism, cleft palate, and marked hypotonia. Internal abnormalities demonstrated at autopsy included atrial and ventricular septal defects, pyloric stenosis, cystic kidneys, and hypoplastic ovaries. No unusual dermatoglyphic patterns were discovered. The sex chromatin of a buccal smear and skin fibroblasts were essentially within the normal female range. Karyotyping was done with peripheral blood leukocytes and skin fibroblasts. Cells with 46 chromosomes contained normal groups except for C(X-6-12) and

D(13-15). Group C(X-6-12) had 15 normal members and a chromosome with a monocentric ring configuration. The ring was about 85 percent the length of chromosome No. 6; this indicates only a small deletion of an X chromosome or an autosome of similar size. The ring was peripheral in 52 percent of all plates. One group D chromosome had abnormally long short arms which terminated in large satellites. (19 refs.) - *R. Froelich.*

Queen Elizabeth Hospital
for Children
Hackney Road
London E. 2, England

1238 PFEIFFER, R. A., LAERMANN, J., & HEIDTMANN, H. L. Reziproke Translokation zwischen einem Chromosom Nr. 21 (G1) und einem Chromosom der Gruppe C (C6). (Reciprocal translocation between one chromosome No. 21 (G1) and one chromosome of Group C (C6).) *Helvetica Paediatrica Acta*, 22(6):558-564, 1967.

Translocation of a portion of the long arm of 1 large C-group chromosome on the long arm of 1 chromosome in group G was genetically balanced in the healthy mother and grandfather of a mongol infant. The child had 4 small acrocentric chromosomes and therefore was trisomic for No. 21. It is demonstrated by autoradiography that the chromosomes concerned are No. 21 (G1) and No. 6. The translocation seems to be reciprocal, however insertion cannot be ruled out. The interchange concerns a rather large segment of the chromosome No. 6. Three types of gametes without a lethal effect of duplication or deficiency are likely to be produced: normal karyotype; genetically balanced structural heterozygosity; structural heterozygosity plus trisomy 21. (12 refs.) - *Journal summary.*

Institut für Humangenetik
Westfälischen Wilhelms-
Universität
Münster, West Germany

1239 LORD, PATRICIA M., CASEY, MICHAEL D., & LAURANCE, BERNARD M. A new translocation between chromosomes in the 6-12 and 21-22 groups. *Journal of Medical Genetics*, 4(3):169-176, 1967.

A family with a translocation between chromosomes in the 6-12 and 21-22 groups was assumed to be different from 2 other similar cases described in the literature. The first and second-born girl and boy of phenotypically normal parents were found to have MR and other abnormalities. Both had similar facies, widely patent fontanelles, low-set ears, transverse palmar creases, an unusual gait, short incurved fifth digits and koilonychia. No remarkable blood group or linkage patterns were found. Nothing of great significance was found on dermatoglyphic study. Karyotype of the boy and girl showed 46 chromosomes, a missing chromosome from the 21-22 group, and an extra chromosome in group 16. Identical autosomal karyotypes found in the mother, maternal uncle, aunt, and grandmother consisted of a missing chromosome from the 21-22 group, an extra No. 16 chromosome, an extra chromosome in the 13-15 group and one chromosome missing from the 6-12 group. These family members were phenotypically normal and represented a balanced translocation. The affected sibs had an unbalanced translocation and were thought to be trisomic for the short arm of a chromosome in the 6-12 group. Since the 2 similar translocations previously described resulted in grossly abnormal infants who died at 4 months of age, these cases probably represent a different disorder. (2 refs.) - *R. Froelich.*

Department of Human Biology
and Anatomy
University of Sheffield
Sheffield, England

1240 COHEN, MAIMON M., TAKAGI, NABUO, & HARROD, EMMA K. Trisomy D_1 with two D/D translocation chromosomes. *American Journal of Diseases of Children*, 115(2):185-190, 1968.

A 7-month-old infant displayed clinical characteristics of D_1 trisomy but revealed a modal number of 45 chromosomes and 2 apparent D/D translocations. Chromosomal studies of skin and blood cells showed only 3 normal D group chromosomes; 2 additional large metacentric chromosomes were similar, but not identical, to the number 3 pair and were presumed to be D_1/D_2 and D_1/D_3 translocations on the basis of probability and autoradiographic studies. (19 refs.) - *D. Martin.*

219 Bryant Street
Buffalo, New York 14222

1241 WILSON, MIRIAM G., SCHROEDER, W. A., GRAVES, DORIS A., & KACH, VICTOR D. Hemoglobin variations in D-trisomy syndrome. *New England Journal of Medicine*, 277(18):953-958, 1967.

Hemoglobin studies of 6 infants with a D-trisomy (including 1 with a D-D translocation) showed a persistently elevated concentration of hemoglobin F, a possible low concentration of hemoglobin A_2, and (in 4 Ss only) the presence of hemoglobin gamma 4. A seventh infant with a C-D translocation and normal cell mosaicism had normal concentrations of hemoglobin F. All infants were full term; 5 were females. Chromosomal analyses were done on peripheral blood leukocyte cultures in all cases and on skin fibroblast in 1 case. Hemoglobin F was determined by the alkali denaturation method in 3 infants and by column chromatography in 4 infants. The highest proportion (98 percent) of hemoglobin F was found in a 7-day-old infant. Serial determination on 4 infants showed relatively little change throughout the first several months and remained elevated beyond the neonatal period. There does not appear to be a selective depression of hemoglobin A_2 in D-trisomy infants as previously suggested in the literature because hemoglobin A_2 was very low in normal newborn infants as well as in the study group. Hemoglobin Gower 2 was not discovered in these infants. The traces of hemoglobin gamma 4 found in these infants have not been found in normal newborns. When normal hemoglobin F values are found in an infant with D-trisomy phenotype, mosaicism must be suspected. (19 refs.) - *R. Froelich.*

Department of Pediatrics
University of Southern
California School of
Medicine
Los Angeles, California 90033

1242 SPARKES, ROBERT S., CARREL, ROBERT E., & WRIGHT, STANLEY W. Absent thumbs with a ring D2 chromosome: A new deletion syndrome. *American Journal of Human Genetics*, 19(5):644-659, 1967.

A 5-year-old white boy with mental and physical retardation had D2 ring chromosome, no thumbs, and numerous clinical abnormalities. Since these findings correspond to those of 2 other patients described in the literature, a new deletion syndrome is suggested. Abnormal physical features included a trigonocephalic-like head, asymmetrical ears, bilateral colobomata, flattened nose, cardiac murmur, abnormal penis, imperforate anus, and abnormalities of the fingers and toes. A Kuhlmann-Binet IQ score of 4 and a social quotient of 4 indicated profound MR. Abnormal laboratory findings included an elevated serum alkaline phosphatase, elevated serum carotene, and an abnormal EEG. A number of roentgenological abnormalities were present. He had a generalized aminoaciduria which disappeared after treatment with vitamin D for rickets. Chromosome analysis of blood and skin showed a predominant chromosome count of 46. In the D group there were only 5 chromosomes plus a ring chromosome. The ring D chromosome was the same in all karyotypes and was about half the size of a normal D group chromosome. Autoradiographic studies identified the ring chromosome as an abnormally structured D2 chromosome. Gene localization studies were not informative. Dermatoglyphic evaluation revealed no palmar axial triradii, no thenar patterns, only 3 distal palmar digital triradii, and large areas of broken ridges on the palms and the soles of the feet. (33 refs.) - *R. Froelich.*

UCLA School of Medicine
Los Angeles, California 90024

1243 DAY, ELIZABETH J., MARSHALL, RUTH, MacDONALD, P. A. C., & DAVIDSON, W. M. Deleted chromosome 18 with paternal mosaicism. *Lancet*, 2(7529):1307, 1967. (Letter)

A Jamaican male infant who died of respiratory infection at 4 months presented a partially deleted chromosome 18 and congenital abnormalities including microcephaly, deformities of the extremities, a weak high-pitched cry, optic anomalies, and slowed development. During pregnancy, the mother had a positive treponemal-immobilization test, but the infant had a negative Wasserman reaction. Although the mother had a normal karyotype, the father showed a partial deletion of the long arm of chromosome 18. He presumably has a balanced translocation involving a transfer to a member of the A, B, or C groups. Fragmentation of the short arm of a chromosome 16 was also found in 20/100 of the cells studied. Apparently this is the first reported occurrence in man of somatic autosomal deletion not resulting from malignant transformation, irradiation, or viral infection. (2 refs.) - *J. Snodgrass.*

King's College Hospital
Medical School
London S. E. 5., England

1244 AL-AISH, MATTI S., DE LA CRUZ, FELIX, GOLDSMITH, LOWELL A., VOLPE, JOSEPH, MELLA, GORDON, & ROBINSON, J. C. Autosomal monosomy in man. *New England Journal of Medicine*, 277(15):777-784, 1967.

A 4½-year-old MR girl with a complete monosomy G (21-22) had an unusual combination of physical features including a spastic hemiparesis, downward and outward slanting palpebral fissures, small low-set ears, flared nostrils, small cystic mass in umbilicus, occult spina bifida, and short spade-like hands. Pregnancy and delivery were uneventful except for mild respiratory distress at birth. During the infancy period, she had frequent respiratory infections. myoclonic seizures, and gross hematuria. Psychomotor development was markedly delayed. Psychological testing with the Cattell, Gesell, Griffith, and Vineland scales showed a developmental quotient between 29 and 34. Expressive language skills were in the range of 9 to 11 months. Cytogenetic studies on peripheral blood, bone marrow, and skin showed 45 chromosomes, including 2 X chromosomes. A small acrocentric chromosome from Group 21-22 was missing. The unpaired Group 21-22 chromosome was larger than the paired Group 21-22 chromosome, which indicated that the missing chromosome was 21. Seven patients with mosaicism or deletion of chromosome 21-22 are described in the literature. (32 refs.) - *R. Froelich.*

Children's Diagnostic and
Study Branch
National Naval Medical Center
Building 125
Bethesda, Maryland 20014

1245 WELEBER, RICHARD G.,*HECHT, FREDERICK, & GIBLETT, ELOISE R. Ring-G chromosome, a new G-deletion syndrome? *American Journal of Diseases of Children*, 115(4):489-493, 1968.

A girl with a ring- (and hence a partially deleted) G chromosome was studied. Phenotypically the patient showed mental and developmental retardation, microcephaly, low-set ears, ptosis of the eyelids, epicanthal folds, flat nasal bridge, bifid uvula, cutaneous syndactyly of the toes, and marked hypotonia. Many of these findings have not been present in patients with the G-deletion syndrome of "antimongolism," but all were present in another patient with a G-chromosomal deletion. It is therefore proposed that this patient has a new distinctive syndrome due to partial deletion of a G chromosome. Structural gene loci for the Rh and Kidd blood groups and for the red cell enzymes acid phosphatase and adenylate kinase were excluded from the deleted chromosomal segment. The DNA replication pattern of the ring-G chromosome was investigated by autoradiography. The ring-G showed no consistent autoradiographic relationship to the 3 morphologically normal G chromosomes. Together with information from other investigators, this suggests that present autoradiographic methods may not be capable of differentiating chromosome 21 from chromosome 22. (11 refs.) - *Journal summary.*

*University of Oregon
Medical School
Portland, Oregon 97201

1246 GERMAN, JAMES. Mongolism, delayed fertilization and human sexual behavior. *Nature*, 217(5128):516-518, 1968.

It is hypothesized that mongolism may be the result of delayed fertilization due to sporadic or decreased frequency of coitus. Previous research data have established that delayed fertilization of mammalian eggs may have unfavorable results. Hyperdiploid, hypodiploid, and mosaic embryos have been present in increased numbers after delayed fertilization, and examination of the oocyte which has not been fertilized in the tube for several hours has shown scattering of chromosomes from the metaphase plate of the arrested second maturation spindle. Errors in division may be due to a disturbance of chromosomal segregation in the maturing egg existing outside the ovary and suspended in metaphase II a few hours too long before a spermatozoon becomes available to enter it and cause syngamy. Delayed fertilization in human females appears to be a possibility if coitus occurs only sporadically or if it occurs regularly but relatively infrequently - at intervals greater than that of the fertilizing potential of spermatozoa (about 48 hours). (16 refs.) - *B. Bradley.*

Cornell University,
Medical College
New York, New York 10021

1247 EMANUEL, IRVIN, HUANG, SHIH-WEN, & YEH, ENG-KUNG. Physical features of Chinese children with Down's syndrome. *American Journal of Diseases of Children*, 115(4): 461-468, 1968.

Physical features were studied in a series of 56 Chinese children with Down's syndrome, varying in age from newborns to 19 years. All clinical diagnoses were confirmed cytogenetically. Most previously described stigmata were found to be of importance in the present series. The frequencies of many stigmata fell within the ranges reported for other ethnic groups. Some disagreement was seen among the age- and sex-related stigmata reported in this and previous studies. (29 refs.) - *Journal summary.*

Department of Preventive Medicine
University of Washington
School of Medicine
Seattle, Washington 98105

1248 BRØGGER, ANTON. *Translocation in Human Chromosomes: With Special Reference to Mental Retardation and Congenital Malformations.* Oslo, Norway, Scandinavian University Books, 1967, 136 p.

Karyotype analysis was performed on bone marrow, leukocytes from peripheral and whole blood, and skin layers to determine the frequency of chromosomal translocation in 2 groups of clinically diagnosed Down's syndrome (DS) Ss and 1 group of MR Ss with multiple congenital abnormalities. Of the 71 DS Ss in the first group, 68 had a trisomy G_1 chromosome, 1 female had an abnormally large chromosome 16, 1 male had a mosaicism, and a male and female had structural chromosome aberrations. Parental karyotypes of these patients were normal. Of the 17 DS Ss in the second series, all had trisomy G_1 karyotypes, while a male and female had a structural aberration. Again the parental karyotypes were normal. In the 48 cases of MR with malformations, 3 males and 3 females had structural chromosome abnormalities. Examination of 13 relatives of these 6 Ss revealed that 2 were translocation heterozygotes (a mother and maternal grandfather of an S) and 3 brothers of another S had a large Y chromosome. From these findings it appears that the incidence of translocation in DS is 3 percent; that MR is always part of the snydrome when translocation leads to pathological conditions; and that although chromosomes from all groups are capable of undergoing translocation that may cause various congenital malformations, acrocentric chromosomes are the ones most frequently involved in translocations, namely D/D, D/G, and G/G. (331 refs.) - *E. Gaer.*

1249 SOLTAN, HUBERT C., SERGOVICH, FREDERICK R., & BARR, MURRAY L. Studies of the genetics of mongolism. In: Jervis, George A., ed. *Mental Retardation: A symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 2, p. 19-34.

Chromosome studies of the parents and siblings of 6 (5 males, 1 female) D/G type (13-15/21) translocation mongoloids and 6 (3 males, 3 females) G/G type (21-22/21) translocation mongoloids suggest that the occurrence of the translocation error in mongolism may be a *de novo* event. The carrier state was present in only 2 of the 23 parents available for study. Both of these parent translocation carriers had 45 chromosomes and mongoloid children with a D/G type of translocation. A second mongoloid of the regular trisomic type, with a relationship at least as distant as first cousin, was found in 4 of the families where parents had normal karyotypes. An incidence comparison of maternal ages suggested that the frequency of translocation mongoloids is lower in an unselected group than in a low maternal age group. A dermatoglyphic comparison of the prints of 21 translocation mongoloids (14 D/G, 7 G/G) with those of 100 regular trisomy mongoloids indicated that the prints of the translocation group were less typically mongoloid than those of the trisomy group. (27 refs.) - *J. K. Wyatt.*

1250 PENROSE, L. S. Studies of mosaicism in Down's anomaly. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 1, p. 3-18.

An examination of 17 cases (6 males; 11 females; mean IQ, 70) of cytological mosaicism in Down's anomaly confirmed the existence of a clinical group of incomplete mongoloids. Fibroblast cultures contained twice as many trisomic cells as leucocyte cultures. Characteristic physical features included short

stature, diminution of head length, fissured tongues, and transverse palmar creases. Dermatoglyphic patterns were intermediate between those of normals and those of fully developed mongoloids. An analysis of the relationship between maternal age and mosaicism indicated 2 possible causes of mosaic mongolism: (1) the occurrence of a somatic nondisjunction in a normal embryo in mothers under 30 and (2) the occurrence of an error in somatic mitosis in trisomic embryo in older mothers. (32 refs.) - *J. K. Wyatt.*

1251 MacGILLIVRAY, RONALD C. Congenital cataract and mongolism. *American Journal of Mental Deficiency*, 72(4):631-633, 1968.

The literature on cataract in mongolism is briefly reviewed and a further instance of the rare congenital form reported. It is suggested that such cases are valuable in relationship to embryonic development, that there appears to be some association between congenital cataract and mongolism, while the patient described also illustrates the putative link between infective hepatitis and Down's anomaly. (27 refs.) - *Journal abstract.*

Lennox Castle
Lennoxtown, Scotland

1252 SEEFF, L. B., LEVITSKY, J., TILLMAN, P. W., PEROU, M. L., & ZIMMERMAN, H. J. Histopathology of the liver in Down's syndrome. *American Journal of Digestive Diseases*, 12(11):1102-1113, 1967.

Sections of liver were obtained at necropsy from 48 patients with Down's syndrome, who ranged in age from 5 days to 72 years. The incidence of histological abnormalities was compared with that observed in the livers of 48 matched control patients suffering from a variety of mental disorders. Fatty metamorphosis (69 percent), portal tract abnormalities (96 percent), and amyloidosis (8 percent), were found to be significantly more common in the mongoloid patients. Cirrhosis, granulomas, and acidophilic bodies were twice as common among the mongoloid patients. Sinusoidal dilation and central-vein sclerosis were at a level not significantly greater than in the control group. The possible relationship of fatty metamorphosis and amyloidosis to the specific chromosomal abnormalities is considered. (21 refs.) - Source: *Journal of the American Medical Association*, 203(1):166, 1968.

Liver and Metabolic Research
Laboratory
Veterans Administration
Hospital
50 Irving Street N. W.
Washington, D. C. 20422

1253 MILUNSKY, AUBREY, LOWY, CLARA, RUBENSTEIN, ARTHUR H., & WRIGHT, A. D. Carbohydrate tolerance, growth hormone and insulin levels in mongolism. *Developmental Medicine and Child Neurology*, 10(1):25-31, 1968.

Plasma insulin and growth hormone levels were measured during glucose and insulin tolerance tests in comparable groups of children with mongolism and other causes of mental deficiency. Low plasma-insulin levels in response to a glucose load were found in both groups and also in normal children when compared with adults. Growth hormone levels were normal both in mongoloid and mentally defective children. (24 refs.) - *Journal summary.*

Tufts-New England Medical
Center
171 Harrison Avenue
Boston, Massachusetts 02111

1254 KELLY, SALLY, COPELAND, WILLIAM, & ALMY, RYDIA. Galactose-1-phosphate uridyl transferase in mongols. *New York State Journal of Medicine*, 67(20):2714-2719, 1967.

Galactose-1-uridyl transferase (GPUT) activity in 17 MR mongoloid Ss (MS) was on the average greater than the activity in normals and in 15 non-mongoloid Ss (non-MS). Blood samples collected by finger-prick technique were assayed colorimetrically for GPUT activity on the basis of the time it took to decolorize methylene blue. Rapidity of the reaction indicated increased enzyme activity. For the MS the mean decolorization time was 0.72 that of the normal sample, while the mean enzyme activity was 1.4 times greater

than the standard. The non-MS decolorization time was 0.98 that of the normals, and the enzyme activity was 1.1 times greater. Comparison of enzyme activity with hematocrit revealed a direct relationship between them. Since samples for younger males had higher activity, it appeared that age and sex also had an effect. Karyotype analysis revealed the mongolism to be trisomy type in 15 or more and G/D translocation in 1; however, there was no difference in transferase activity. Neither age, sex, nor hematocrit could be held accountable for the normal activity found in 4 MS and 3 non-MS. Trisomy with concurrent gene dosage effect may be responsible for the increased enzyme activity in MS, and its appearance with MR and physical signs would indicate a geographical genetic proximity. Normal activity found in some trisomy MS and increased levels in some non-MS may be caused by genetic segregation which cannot be detected by current methods. (15 refs.) - *E. Gaer.*

Albany Medical College
Albany, New York

1255 MONTELEONE, PATRICIA L., NADLER, HENRY L., PI, CHEN-SHIU, & HSIA, DAVID YI-YUNG. Isoenzymes in Down's syndrome. *Lancet*, 2(7511):367-368, 1967. (Letter)

White blood cell isoenzymes failed to reveal differences between the enzyme activity of acid phosphatase, alkaline phosphatase and glucose-6-phosphate dehydrogenase (G-6PD) in 4 patients with Down's syndrome and the activity in 4 controls. The enzymes were separated by starch-gel electrophoresis on glass-bead columns by the procedure of Rabinowitz. Although 2 Ss with Down's syndrome had an enzyme variant (1 for alkaline phosphatase and 1 for G-6PD), the results suggest that the isoenzymes in total white cells, pure lymphocytes, and pure polymorphonuclear leucocytes are not accountable for the increased leucocyte enzyme activity seen in Down's syndrome patients. Evidently some other constituent is present. (14 refs.) - *W. Asher.*

Department of Pediatrics
Northwestern University
Medical School
Chicago, Illinois 60614

1256 PHILLIPS, JOHN, HERRING, RUFUS M., GOODMAN, HAROLD O., & KING, J. S., JR. Leucocyte alkaline phosphatase and erythrocyte glucose-6-phosphate dehydrogenase in Down's syndrome. *Journal of Medical Genetics*, 4(4):268-273, 1967.

Translocation mongoloids could not be differentiated from trisomy mongoloids by determination of leukocyte alkaline phosphatase (LAP) or erythrocyte glucose-6-phosphate dehydrogenase (G6PD). Ss were 28 mongoloids and 28 MR non-mongoloids. An additional 39 mongoloid and 39 MR non-mongoloid Ss were given histochemical tests of LAP activity. All Ss were Caucasians (CA, 7-28 yrs). LAP and G6PD were determined by colorimetric methods. Analysis of variance of samples showed that intra-individual variability of LAP and G6PD was significantly less than inter-individual variability. This suggested that genetic variation was being detected by the tests; however, repeated determinations also suggested that endogenous and exogenous factors contributed to variations. Histochemical LAP scores and mean G6PD activities were significantly higher among mongoloids of both sexes than among control Ss. The mean colorimetric LAP activity was higher among male mongoloids than among male control Ss, but no such significant difference was found between females. The distribution of values for all 3 tests showed almost complete overlap. This does not support previous studies, which were reported to be able to detect translocation mongolism from the standard type by these biochemical assays. (27 refs.) refs.) - *R. Froelich.*

Bowman Gray School
of Medicine
Winston-Salem, North Carolina

1257 TURPIN, RAYMOND, BERGOGNE-BEREZIN, EUGÉNIE, CAILLE, BERNARD, & SALMON-BONNEREAU, DENISE. Inactivation of isomiazid in Down's syndrome. *Lancet*, 2(7530):1369, 1967. (Letter)

A group of 41 boys and girls with Down's syndrome (DS) was significantly slower ($p<.01$) in activating isoniazid than was the group of 55 controls. The mean serum-levels of free isoniazid 6 hours after ingestion of 4 mg/kg of the compound were 0.634 μg/ml for

the DS group and 0.379 μg/mg for the controls. It is possible that children with DS have a defect in acetylation. (2 refs.) - *A. Huffer.*

Institut de Progénèse
15 Rue de l'Ecole de Médecine
Paris, France

1258 GOLDIE, L., CURTIS, J. A. H., SVENDSEN, U., & ROBERTON, N. R. C. Abnormal sleep rhythms in mongol babies. *Lancet*, 1(7536):229-230, 1968.

Characteristic changes in the electroencephalogram (EEG) of newborn mongoloids are described. The period of non-rapid eye movement (non-REM) sleep is considerably longer and the EEG tracing during this phase, though episodic, is less clearly so than in the normal, and more irregular in its periodicity with more low-amplitude slow-frequency activity. Sharp waves and frontal humps were not seen in non-REM sleep. Body movements are more striking in both phases of sleep, particularly in the non-REM stage. (11 refs.) - *Journal abstract.*

Institute of Child Health
Hammersmith Hospital
London W. 12, England

1259 BIRD, J., CHARALAMBOUS, C., COLLINS, M. J., GARDNER, P. A., KEMBERY, J., & SHILLIBIER, M. A. Characteristics, training and life of mongols. *Nursing Mirror*, 124 (23):533-536, 1967.

Mongolism is a syndrome of multiple congenital anomalies including MR (usually severe), skeletal abnormalities, heart defects, ephthalmic problems, and skin and dermatoglyphic alterations. These anomalies have varying degrees of manifestation in each S. The chromosomal aberration is either an extra chromosome (trisomy 21) or translocation of part of 1 chromosome to another. With proper parental attitude, mongoloid children can live quite successfully at home. Their development is similar to that of normal children, but the pace is slower. They require patience with frequent repetition and encouragement for learning. Their social and emotional needs can best be met through workshops and association with others of comparable abilities. A well cared for, adjusted S with mongolism can be a pleasant and useful member of a household or hospital. (No refs.) - *W. A. Hammill.*

No address

1260 WOOLLACOTT, S., & PEARCE, JOHN. A myotonic syndrome associated with Klinefelter's syndrome. *Journal of Medical Genetics*, 4(4):299-301, 1967.

A 23-year-old man with both Klinefelter's syndrome and a myotonic syndrome represented the first reported association of these 2 disorders. When found in the snow at the age of 3 years, he was temporarily unable to walk. At the age of 8 he had a slightly clumsy gait. Later whenever he was cold he noticed painful stiffness in several muscles. He was a poor student but was able to work as a laborer. Detailed clinical examination at age 21 showed no other abnormalities except for small testes and evidence of hypogonadism. Myotonia could be demonstrated by percussion of arms or tongue. The arms could be made worse by immersing them in cold water. There was no myotonic lid lag. The buccal smear was sex chromatin positive and a leukocyte culture showed a chromosome number of 44 and an XXY karyotype. An electromyogram showed a typical myotonic pattern with high frequency after-discharges. A potassium loading test did not produce weakness. There were no similar abnormalities in the family history. The sensitivity to cold, the infrequency of attacks, and the exclusion of other syndromes suggest a diagnosis of paramyotonia congenita. No hypothesis explaining the association of a myotonic syndrome and Klinefelter's syndrome is offered. (17 refs.) - *R. Froelich.*

Department of Neurology
General Infirmary
Leeds 1, England

1261 NADEL, MARTIN, & KOSS, LEOPOLD G. Klinefelter's syndrome and male breast cancer. *Lancet*, 2(7511):366, 1967. (Letter)

Klinefelter's syndrome was not demonstrated in 16 men with known carcinoma of the breast. A comparable study indicated that 3 out of 21 phenotypic males with breast cancer had positive buccal smears. A combination of the results of both studies would indicate an incidence of 3 positive smears for 37 cases of male breast cancer. (6 refs.) - *W. Asher.*

Memorial Hospital for Cancer
and Allied Diseases
New York, New York 10021

1262 FERRIER, P. E., FERRIER, SIMONE A., SCHÄRER, K. O., GENTON, N., HEDINGER, CHR., & KLEIN, D. Multiple chromosome aberrations: XO/XY/XYY mosaicism and a translocation in the same family. *Helvetica Paediatrica Acta*, 22(6):516-528, 1967.

A family is reported in which 2 kinds of chromosome anomalies could be observed: a gonosomal mosaicism in an intersex child and an asymptomatic translocation in other members. The propositus was a 1-year-old male pseudohermaphrodite with gonosomal mosaicism of the XO/XY/XYY type. The father and the oldest sister of this child were carriers of a translocation involving a D group chromosome. A small chromosomal segment was added to the short arm of the D chromosome, while the other chromosomes showed no evidence of size change due to loss of material, and therefore the origin of the translocated segment was unknown. Similar translocations have been described before in phenotypically normal individuals, and it is therefore possible that the presence of two different chromosome anomalies in the same family is fortuitous. However, there is some growing evidence that chromosomal errors tend to occur repeatedly in certain families. It is postulated that in this particular family the Y chromosome has a tendency to lend itself to meiotic and mitotic errors and that the translocated segment represents some Y chromosome material. Due to the relative inertness of the Y chromosome the presence of the translocation does not produce any phenotypical changes. (46 refs.) - *Journal summary.*

University of Washington
Seattle, Washington 98105

1263 FERRIER, PIERRE E., & KELLEY, VINCENT C. Influence of the Y chromosome on gonadal differentiation: Asymmetrical gonads in an XO/XY mosaic. *Journal of Medical Genetics*, 4(4):288-294, 1967.

A 5-month-old infant with a testis on one side and a mixed gonad (testicular structure with ovarian-type stroma) on the other side had an XO/XY mosaicism. The infant had ambiguous external genitalia. Birth weight was 1,400 gm. A buccal smear was chromatin negative. Except for the abnormal genitalia the infant appeared normal. A laparotomy at 5 months of age revealed a bicornuate uterus; bilateral, well-developed fallopian tubes; and a small gonad on each side at the usual position of the ovaries. The left gonad was a primordial testis and the right gonad was partly ovarian and partly testis. A mosaicism of the 45, XO/46, XY type was found in cultures of peripheral blood leukocytes, skin of the right forearm, skin of the left side of the abdomen, and the right gonad. The XO cells outnumbered the XY cells in all cultures. The left gonad contained only cells of the 45, XO type. The male differentiation of the gonads despite the small number or absence of XY cells suggested that the differentiation occurred from XY cells in the embryonic anlage. Even minor mosaicism including XY cells may be of great significance in gonad differentiation. The role of the Y chromosome appears to be very important, and karyotype study of only one organ or tissue may be misleading. (26 refs.) - *R. Froelich.*

Department of Pediatrics
University of Washington
Seattle, Washington 98105

1264 PERSSON, T. An XYY man and his relatives. *Journal of Mental Deficiency Research*, 11(4):239-245, 1967.

Examination of a 42-year-old man who had committed a violent robbery revealed that he had an XYY constitution, was 6 feet, 4 inches tall, had an IQ of 76 (Wechsler-Bellevue scale), and had a history of antisocial behavior. Dermatoglyphic analysis indicated low ridge counts on the fingers, toes, and hallucal areas of the soles. His parents and 7 siblings showed normal sex chromatin patterns and were at least 10 cm shorter. (21 refs.) - *A. Huffer.*

St. Jörgen's Hospital
Lillhagen, Sweden

1265 TELFER, MARY A., BAKER, DAVID, CLARK, GERALD R., & RICHARDSON, CLAUDE E. Incidence of gross chromosomal errors among tall criminal American males. *Science*, 159 (3820):1249-1250, 1968.

Chromosome studies on 129 tall men surveyed in 4 different institutions for the care of criminal males in Pennsylvania, who are MR, mentally ill, or criminally insane, showed that 1 in 11 Ss displayed aneuploidy of the sex chromosomes; specifically, 5 cases of 47 XYY and 7 cases of Klinefelter syndrome were identified. All the aneuploid Ss were mentally ill; none had been cytogenetically diagnosed. (8 refs.) - *Journal abstract.*

Elwyn Institute
Elwyn, Pennsylvania 19063

1266 GRIFFITHS, A. W., & ZAREMBA, J. Crime and sex chromosome anomalies. *British Medical Journal*, 4(5579):662, 1967. (Letter)

Leukocyte chromosome studies were made of consenting convicts 6 feet or over and randomly selected controls admitted to prison during the same period. Of 34 Ss over 6 feet, 31 were normal, 2 were 47 XYY, and 1 was 47 XXY. Of 33 controls, 32 were normal and 1 was a possible balanced translocation with 45 chromosomes. (3 refs.) - *J. Snodgrass.*

H. M. Prison
Wandsworth
London S. W. 18., England

1267 KELLY, SALLY, ALMY, RYDIA, & BARNARD, MARGARET. Genetics: Another XYY phenotype. *Nature*, 215(5099):405, 1967.

A male XYY phenotype exhibited a webbed neck, average height, a good physique, and normal adult genitalia. Leukocyte chromosome counts showed 47 chromosomes in 90 percent of the cells. The Y and G group chromosomes were further distinguished by autoradiography which showed an extra small acrocentric chromosome that fulfilled the morphologic criteria for a Y chromosome. It is unlikely that this phenotype is a male Turner's syndrome or a cytogenetic Turner's mosaic. (11 refs.) - *W. Asher.*

New York State Department
of Health
Albany, New York 12200

1268 BEISCHER, N. A., FORTUNE, D. W., & FITZGERALD, M. G. Hydatidiform mole and coexistent foetus, both with triploid chromosome constitution. *British Medical Journal*, 3(5563); 476-478, 1967.

Triploid chromosome complement in man has been found in aborted fetuses and 3 living Ss. A 22-year-old woman with severe pre-eclampsia at 17 weeks gestation had a hemoglobin drop from 13 to 7.1 gm/100 ml without vaginal bleeding, urine protein content of 20 gm/liter, and blood pressure of 170 systolic and 110 diastolic. A 24 week gestation X-ray examination showed a fetal skeleton commensurate with 18 weeks gestation; urinary estriol was 1.5 mg/24 hours; and urinary chorionic gonadotrophin was 300-400 iu/ml. Delivery of a malformed fetus was accomplished by oxytocic infusion. Within 10 minutes of delivery, the mother became cyanotic, dyspneic, and had consolidation in both lung bases; she responded well to aminophylline therapy. Molar emboli were thought to be the cause of the acute heart failure. Multiple abnormalities of the fetus were found on pathological examination. Placental exam revealed swollen villi with some trophoblastic proliferation. Cytogenetic studies revealed 69 chromosomes in molar and fetal tissues with a probable XXX sex chromosome constitution. Triploidy is among the most frequent chromosomal abnormalities associated with molar pregnancy. Central nervous system defects with a single molar placenta associated with a fetus is not uncommon. (15 refs.) - *W. Asher.*

University of Melbourne
Melbourne, Australia

1269 KOHN, GERTRUDE, *WINTER, JEREMY S. D., & MELLMAN, WILLIAM J. Trisomy X in three children. *Journal of Pediatrics*, 72 (2):248-252, 1968.

Presentation of 3 children with trisomy X again demonstrates the clinical variability of this disorder and suggests that it cannot be associated with a characteristic syndrome. Case 1 was a 2½-year-old Caucasian girl who presented with fullness of skin at the back of the neck, minimal webbing, and a history of poor physical growth during the first year of life. She was normal mentally (Stanford-Binet and Merrill-Palmer) and had a bone age of 1 to 1½ years. Case 2 was a 4-year-old Caucasian girl who had nystagmus at 5 days of age and presented at 2½ years with retarded growth and development. At 4 years of age

she had a heart murmur and was a short, hyperactive, negativistic child. Her estimated IQ was 45 to 50 (Catell Infant Intelligence Scale). Case 3 was nearly 5 years of age, had auditory anomalies, and had an estimated IQ of 55 and 60. Four of 7 siblings had major renal and urogenital anomalies. The total number of reported patients with trisomy X is now 65, of which 44 are adults, 9 are children, and 12 are newborn infants. The incidence of trisomy X in an institutionalized MR population has been estimated to be 4.22 per 1,000, which is higher than the estimated 1.2 to 1.78 per 1,000 live births of the newborn population. This suggests a possible causal relationship between trisomy X and MR. The maternal ages of the 3 children in this study were 30, 38, and 39; this supports a previous suggestion that children with trisomy X are more commonly born of older women. (26 refs.) - *R. Froelich.*

*University of Manitoba
School of Medicine
Children's Hospital of Winnipeg
Winnipeg, Manitoba, Canada

1270 PRATS, J., & MORAGAS, A. Structural chromosome anomaly in a case of multiple malformation. *Helvetica Paediatrica Acta*, 22(6):565-571, 1967.

A newborn infant presented facial deformity, anophthalmia, partial rectal membrane, slight hypertonia, polymicrogyria, kidney dysplasia with formation of cysts, accessory spleens and existance of cytomegalic cells in the lungs. Cytogenically, there is an abnormal chromosome similar to those of the B type but somewhat more subtelocentric. The different hypotheses for its appearance are discussed but there is not sufficient evidence to confirm any of them. (11 refs.) - *Journal summary.*

Children's Hospital of the
"Seguridad Social"
Barcelona, Spain

1271 ISMAIL, A. A. A., HARKNESS, R. A., KIRKHAM, K. E., *LORAINE, J. A., WHATMORE, P. B., & BRITTAIN, R. P. Effect of abnormal sex-chromosome complements on urinary testosterone levels. *Lancet*, 1(7536): 220-222, 1968.

Urinary testosterone assays have been performed in patients with abnormalities of their sex chromosomes and the results have been compared with those in normal individuals. In phenotypic males with a 47,XYY sex-chromosome constitution, the mean testosterone output was significantly higher than in normal ambulant males, but was not significantly different from that in inpatient controls with a 46,XY constitution. The presence of an extra X chromosome in phenotypic males was associated with a low testosterone output. In phenotypic females with a 46,XY chromosome complement testosterone levels were markedly higher than in normal females and in subjects with 46,XXqi and 47,XXX constitutions. The presence of an extra X chromosome in phenotypic females did not affect urinary testosterone excretion. (17 refs.) - *Journal abstract.*

*Clinical Endocrinology
Research Unit
2 Forrest Road
Edinburgh 1, Scotland
Great Britain

1272 TAYLOR, ANGELA I., & *MOORES, ELIZABETH C. A sex chromatin survey of newborn children in two London hospitals. *Journal of Medical Genetics*, 4(4):258-259, 1967.

A survey of the sex chromatin of 9,688 live hospital births (4,754 girls and 4,934 boys) discovered a total of 19 abnormalities. The infants were born at Queen Charlotte's or Guy's Hospital over a 1½ year period. Among the females, 5 were chromatin negative. Two of these were examined further and found to have XY sex chromosomes. One of these was found to have testes and was considered to be a case of testicular feminization. The other XY female had lipoid adrenal hyperplasia. Two females had 2 sex chromatin masses and were presumptive XXX females. Among the males, 11 were chromatin positive with single masses and 1 was chromatin positive with 2 masses. Of the 11 with single chromatin masses, 2 had Down's syndrome and 9 were clinically normal. Chromosome studies on 4 of these children showed that 1 had 48 chromosomes with trisomy 21 and an XXY constitution, 2 had an XXY constitution and 1 was an XY/XXY mosaic. These data were combined with data from 6 other surveys. The incidence of chromatin negative females is 1 per 2,758 live births, and the incidence of chromatin positive males with 1

mass is 1 per 504 live births. The incidence of chromatin positive males with 2 masses is 1 per 23,229 live births. (10 refs.) - *R. Froelich.*

*Institute of Cardiology
35 Wimpole Street
London W. 1, England

1273 INHORN, STANLEY L. Chromosomal studies of spontaneous human abortions. In: Woollam, D. H. M., ed. *Advances in Teratology: Volume Two.* New York, New York, Academic Press, 1967, Chapter 2, p. 37-99.

Renewed interest in human cytogenetics has resulted in an accumulation of data on the relationship of chromosomal abnormalities to spontaneous abortion. Spontaneous abortion can be attributed to: (1) environmental agents such as drugs, prenatal infections, and physical injury, (2) maternal factors including endocrine deficiencies, abnormal reproductive organs, and nutritional deficiencies, (3) maternal-fetal interactions consisting of placental malfunction for any cause and various immunologic reactions, (4) genetic factors among which are lethal genes and chromosomal aberrations. Generally, tissue cultures have been utilized to investigate the last factor. Cytogenetic studies of 466 spontaneous abortions in the past 5 years have revealed that 120 (about 25 percent) had some chromosomal anomalies. There were 55 autosomal trisomies, 27 sex chromosome abnormalities (25 were 45-X0 type), 22 triploids, 9 tetraploids, 4 structural aberrations, and 3 autosomal monosomies. Studies of karyotypes of marital partners of habitual aborters have yielded only occasional aberrations; since these same aberrations have occurred in normals and in various disease states, their significance is unclear. A small number of studies on families with known translocation indicate that the miscarriage rate is high, but cytogenetic studies of aborted fetuses are too few for further interpretation. Hydatidiform moles and their malignant counterparts have shown an increased incidence of polyploidy and triploidy. A correlation has been found between the chromosomal changes and the severity of the morphologic alteration. Valuable epidemiologic information has been obtained from these recent cytogenetic studies. (214 refs.) - *A. C. Molnar.*

1274 CARR, DAVID H. Chromosome abnormalities in spontaneous abortuses. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 3, p. 35-47.

A study of tissue cultures obtained from 100 spontaneous abortuses revealed a 20 percent incidence of gross chromosomal abnormality. The types of abnormal development found were: C-trisomy, D-trisomy, E-trisomy, G-trisomy, XO, triploidy, and tetraploidy. Average maternal age for all cases having a chromosome abnormality was 30.8 years. Average maternal age for cases with a trisomy abnormality was 33 years. With the exception of the tetraploid abnormality, which has not been previously reported in living persons, the chromosome abnormalities were similar to those found in liveborn individuals. No cases of structural anomaly or translocation were found. (32 refs.) - *J. K. Wyatt.*

1275 The offspring of incestuous unions. *Eugenics Review*, 59(2):76-77, 1967.

Two recent studies of the offspring of incestuous unions reveal that incest is 4 times more prevalent than cousin marriages and that inbreeding increases the incidence of malformations in the offspring. One study matched 18 incestuous pregnancies (12 brother-sister, 6 father-daughter) with 18 control pregnancies. Of the offspring of the incestuous unions, 7 were normal, 1 was premature and died at 6 hours, 1 died at 15 hours from respiratory distress syndrome, 1 died at 2 months of glycogen storage disease, 1 had bilateral cleft lip, 2 were SMR, and 5 were EMR. Of the 18 controls, 1 died, none had an IQ less than 80, and only 1 had a malformation (branchial cyst). An English study of 13 offspring of incestuous unions reported similar findings; only 5 were normal. Delay in confirmation of adoption orders of the offspring of an incestuous union until a full medical examination is conducted at age 1 year is recommended. (4 refs.) - *W. Asher.*

1276 SUTTON, H. ELDON. Human genetics: A survey of new developments. *Science Teacher*, 34(9):51-55, 1967.

A survey of new developments in human genetics included developments in the new field of cytogenetics, trisomy syndromes, deletions, translocations, biochemical genetics, quantitative control of gene action, PKU, and pharmacogenetics. Procedures in cytogenetics that have permitted characterization of somatic chromosomes include the ability to culture cells *in vitro*, the use of colchicine to arrest cell division in metaphase, and the treatment of cells with low osmotic buffers to disperse chromosomes. The result of these developments was the discovery that normal human beings have 46 chromosomes and that mongoloids have 47. This led to investigation of other clinical syndromes and the discovery of 2 other trisomy syndromes and abnormalities of the sex chromosomes. Structurally abnormal chromosomes (deletions or translocations) have been associated with clinical syndromes such as the "cat cry" syndrome (deletion of chromosome 5) and chronic granulocytic leukemia (deletion of the long arm of a G group chromosome). Much of the knowledge in the important field of biochemical genetics comes from inherited variants of hemoglobin. Amino acid substitutions and the deoxyribonucleic acid code were worked out from these variants. Specific mutations affect metabolic reactions in PKU and dozens of other diseases. Pharmacogenetics is a field concerned with the inherited variation of a person's reaction to drugs. The best known example of this is glucose-6-phosphate dehydrogenase deficiency. (No refs.) - *R. Froelich.*

University of Texas
Austin, Texas

Professional Services

1277 FACKLER, ELEANOR. The public health nurse in retardation. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, June 15-20, 1967, 10 p. Mimeographed.

Two specific areas of nursing practice where public health nurses can be helpful to MR children and their parents are crisis intervention and play group experience. Crisis periods for parents of MRs may occur when the child is born, when MR is diagnosed, when the child is rejected at public school, or when decisions about institutionalization must be made. Nursing intervention during periods of crisis should include ego-strengthening activities, mobilization of family and community resources, and anticipatory guidance. Nurses should assume the role of "participant-observer" in their interactions with families. Play group experiences can be used to help the MR child begin to develop thinking and problem-solving abilities. Activities can be planned which will help the child attain emotional, social, physical, intellectual, and language growth. In addition to the knowledge required to perform their traditional responsibilities, public health nurses who work with the MR need to be skillful in making developmental evaluations and need to be familiar with psychological testing procedures. (9-item bibliog.) - *J. K. Wyatt.*

The Children's Memorial Hospital
707 Fullerton Avenue
Chicago, Illinois 60614

1278 PENNINGTON, MAVIS. Using a community centered approach in teaching nursing students to work with mentally retarded children and their families. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 9 p. Mimeographed.

The Sacred Heart Dominican College (Houston, Texas) uses public health nursing laboratory experience to teach student nurses to work with MR children and their families. The college is assisted by the Mental Evaluation Clinic in providing this community and family centered experience for its students. The purpose of the program is to help students: (1) increase their knowledge regarding MR, (2) increase their ability to identify growth and development deviations, (3) develop skills for nursing the MR, (4) learn how to teach families to care for their MR members, (5) learn about and use community MR resources, and (6) gain experience in the use of a multidisciplinary approach in working with MRs and their families. An orientation period is used to introduce fourth-year students to public health agencies and to acquaint them with the scope of the local MR problem. Each

student is then assigned a family with an MR child. She follows this family through an entire sequence of public health nursing care. (5 refs.) - *J. K. Wyatt.*

Sacred Heart Dominican
College
1919 Crawford
Houston, Texas 77002

1279 OHIO. MENTAL HYGIENE AND CORRECTION DEPARTMENT. *The Ohio Psychiatric Aide Manual.* Columbus, Ohio, 1967, 250 p. $3.85.

In order to provide the best possible care and services for institutionalized MRs, attendants need to be aware of etiology, classifications, present treatment practices, and available programs. Treatment must be adjusted to each specific case and may consist of individual, group, diet, or medical-chemo therapies; home, foster, or institutional care; and special classes, sheltered workshop, special vocational preparation, and employment. Nursing care should emphasize the understanding of physical, social, and emotional needs so that each MR can develop to the maximum of his potential. Attendants need to have attitudes of patience, tolerance, and understanding. Patients should not be labeled by IQ scores; rather their current status should be evaluated in terms of level of adaptive behavior, intellectual functioning, and possibilities for change in status. Programs should provide opportunities for learning through imitation, repetitious experiences, use of capabilities, identification, training and reward. Education and training areas for EMRs usually include academic training, industrial therapy, health and physical education, speech and hearing training, home economics, and vocational training. TMR training emphasizes speech, social skills, personal care, coordination, and work training in a sheltered situation. Programs for SMRs concentrate on the development of self-care activities. (128-item Bibliog.) - *J. K. Wyatt.*

CONTENTS: You and the Patient; Mental Health: Yesterday, Today and Tomorrow; The Therapeutic Team; Child Psychiatry; Adolescent Psychiatry; Adult Psychiatry; The Geriatric Patient; The Mentally Ill and the Law; The Mentally Retarded; The Epileptic Patient; Medical and Surgical Conditions; Communicable Diseases; Drugs and Their Administration; First Aid and Emergencies; Housekeeping, Sanitation and Safety; Food Service; Ward Administration and Communications; Milieu Therapy; Glossary.

1280 ITKIN, WILLIAM. Implications of mental retardation research for the operations and training of school psychologists. *Mental Retardation* (AAMD), 5(6):15-18, 1967.

The findings of the Chicago Cooperative Research Project suggest the following implications for the operations and training of school psychologists: (1) school psychologists should have an active role in screening referrals; (2) they should not use the same individual test or test battery in every examination; (3) discriminating testing means better training of school psychologists in testing techniques; (4) the training of school psychologists should emphasize the study of minority group cultures, behavior deviations, child and parent counseling, knowledge of social service facilities, and consultation. Enough well-trained psychologists could be made available by the kind of far-sighted legislation illustrated by the Gibbons Bill for the training of child development specialists. (10 refs.) - *Journal abstract.*

Special Education Program
Illinois Teachers College
Chicago-North
Chicago, Illinois

1281 WHITEHOUSE, FREDERICK A. The concept of therapy: A review of some essentials. *Rehabilitation Literature*, 28(8):238-247, 1967.

The present goal of therapy is to determine the best specific type of therapy which will be helpful to each patient rather than to develop a single type of therapy which can be universally applied. Major areas in which therapeutic measures are available include psychological, psychophysical, personal-expressive, social, social-spirtual, incidental,

spiritual, situational, educational, client involvement, physical, motivational, general medical, and pseudotherapy. The many types and varieties of therapy exist because: (1) a single type of therapy is not suitable for all cases; (2) therapists have devised specific methods to meet the varying needs of groups and individuals; (3) knowledge about psychotherapy is limited, and the various methods have been developed in attempts to find better procedures; (4) therapeutic systems reflect the specific culture in which they are practiced; and (5) since personalities of therapists vary, different therapies allow for the involvement of the needs and skills of individual therapists. The variety of psychotherapies may be compared with the variety of religions which have developed. If a person is not helped by 1 religion, he may be helped by another. The same may be true of therapy. (38 refs.) - *J. K. Wyatt.*

Hofstra University
Hempstead, New York

Miscellany

1282 KIRMAN, BRIAN H., & BICKNELL, JOAN. Congenital insensitivity to pain in an imbecile boy. *Developmental Medicine and Child Neurology*, 10(1):57-63, 1968.

Contrary to repeated statements in the literature, most mental defectives respond appropriately to painful stimuli. An exceptional case of congenital insensitivity to pain in a mentally backward boy is described. The defect resulted in multiple burns and sores with septic complications and urinary infection, leading to complete disability. A diagnosis of sensory neuropathy was suggested. The case is similar to others described, which are without gross lesions in the nervous system, and in which there is a functional sensory defect perhaps due to a genetically determined enzyme deficiency. (18 refs.)- *Journal summary.*

Fountain and Queen Mary's
Hospital Group
Carshalton, Surrey
England

1283 WOOLLAM, D. H. M., ed. *Advances in Teratology: Volume Two*. New York, New York, Academic Press, 1967, 306 p. $16.00.

This second annual volume attempts to draw together cognate clinical and experimental data in teratology. Inclusion of personal studies, reviews, and research by experts with various approaches to teratology is intended to provide broad coverage of the entire field. An understanding of the controversial (and neglected) mechanistic (stresses in utero) etiology of many malformations should aid in their treatment and interpretation. Cytogenetic studies of spontaneous abortions have yielded epidemiologic information and have further demonstrated a correlation between chromosomal changes and morphologic alterations in the fetus. Information obtained during the 1963-1965 rubella virus epidemics has pointed out the significance of the infection in congenital malformations, has provided new laboratory techniques and animal systems for further studies, and has revealed the direct cellular influence of the virus. The unquestionable interrelationship between intra-uterine growth retardation and teratogenesis demands that the growth status of a newborn be recorded and tabulated with other vital signs. Further research is needed before the accumulating data on the increased incidence of congenital malformations associated with common antibiotics such as tetracyclines and penicillins can be interpreted. A blastocyst flat-mount technique has been developed as a tool for interpreting experimentally-applied external effects (such as drugs) on the embryo. Inbred strains of mice can be used to advantage in teratological studies since the genetic influence is kept relatively constant, thereby providing a minimum of variables. Homocystinuria, an experiment of nature, has provided another tool which may be useful as a model not only

for teratological research problems but for multidiscipline problems. (933 refs.) - *A. C. Molnar.*

CONTENTS: A Mechanistic Interpretation of Certain Malformations (Browne); Chromosomal Studies of Spontaneous Human Abortions (Inhorn); Homocystinuria (Gaull); Rubella as a Teratogen (Sever); Intra-uterine Growth Retardation (Brent and Jensh); The Blastocyst Flat-mount Technique in Studies on Embryotropic Agents (Lutwak-Mann and Hay); Antibiotics and Congenital Malformations: Evaluation of the Teratogenicity of Antibiotics (Filippi); Teratogenesis in Inbred Strains of Mice (Smithberg).

1284 LUTWAK-MANN, C., & HAY, MARY F. The blastocyst flat-mount technique in studies on embryotropic agents. In: Woollam, D. H. M., ed. *Advances in Teratology: Volume Two.* New York, New York, Academic Press, 1967, Chapter 6, p. 229-238.

Since gross inspection of blastocysts has proved unreliable, a flat-mount technique has been developed which is applicable *in vivo* and *in vitro* and provides semi-quantitative interpretation of the blastocyst. Initially designed for study of rabbit blastocysts, the technique has been used on badger and roe deer and could be adapted to certain stages of blastocyst development in larger domestic animals. Blastocysts are taken directly from the endometrial surface of nembutalized animals, immersed in several changes of methanol, and placed on a coverslip submerged in methanol. Under a stereoscopic microscope, the abembryonic pole is punctured and the trophoblast with the underlying zona pellucida is torn into strips by slits extending to the embryonic disk. The preparation is allowed to dry overnight and then is stained, cleared, and mounted. The embryonic disk, embryo proper, and trophoblast can be viewed in correct topographic relationship. Formation of the primitive streak, extra-embryonic mesoderm, trophoblastic knobs, mitotic activity, sex chromatin, and abnormal mitotic figures can be observed. The total surface area of the blastocyst can be calculated from measurements of the mounted specimen. Normal rabbit blastocysts have been classified into developmental stages upon which evaluation of studies can be based. (9 refs.) - *A. C. Molnar.*

1285 FILIPPI, BRUNO. Antibiotics and congenital malformations: Evaluation of the teratogenicity of antibiotics. In: Woollam, D. H. M., ed. *Advances in Teratology: Volume Two.* New York, New York, Academic Press, 1967, Chapter 7, p. 239-256.

The teratogenic effects on rat embryos of tetracycline and a penicillin-streptomycin complex both with and without vitamin replacement have been studied. Studies were undertaken because of reports of increased congenital malformations and abortions associated with the use of antibiotics in humans. Vitamin supplements were used because it is known that vitamin deficiency can be caused by antibiotics and that congenital malformations appear in embryos when maternal vitamin deficits occur. Pregnant rats were given therapeutic (or less) doses of tetracycline, tetracycline and a B vitamin complex, penicillin-streptomycin complex, and penicillin-streptomycin and a B complex. Tetracycline resulted in cleft palate, hypoplasia of the mandible, micromelia, and syndactyly. Tetracycline and the B complex gave normal young. Penicillin-streptomycin with or without the B complex resulted in rats with micromelia, syndactyly, and ectrodactyly. Tetracycline apparently acted through a deficiency of the B group due to interference with the metabolic activities of the elements in the B complex. The anomalies associated with penicillin-streptomycin are postulated to be due to an allergo-toxic manifestation, antibiotic properties, and lysis of microbic agents. Though these results are not conclusive and application to the human is difficult, they are indications for further work on the teratogenic effects of antibiotics. (51 refs.) - *A. C. Molnar.*

1286 SMITHBERG, M. Teratogenesis in inbred strains of mice. In: Woollam, D. H. M., ed. *Advances in Teratology: Volume Two.* New York, New York, Academic Press, 1967, Chapter 8, p. 257-288.

The propensity of inbred strains (IS) of mice to display a predictable inherited susceptibility towards malformations, coupled with their inherent interstrain differences, makes them suitable tools for teratological research. Studies of X-irradiation and cortisone-induced cleft-palate have demonstrated that generally teratogens: (1) have a critical period when the embryo is especially susceptible to their action, (2) act primarily

311-967 O - 68 - 6

on the embryo, (3) do not act on the preimplantation stages (with exceptions such as X-ray and actinomycin-D, which do act in these early stages), (4) are dose related in both their action on the different IS and in their influence on the incidence and degree of the malformations, (5) can produce anomalies similar to those caused by mutant genes but may differ in their embryonic periods of action. They further showed that X-irradiation altered the incidence of skeletal variations in the IS; the direction of the alteration depended on the position of the IS on the scale of developmental potencies. Since the IS had a different frequency of cortisone-induced cleft palate among the various strains, appropriate crossings allowed genetic determinations to be made which indicated that an interaction of multiple genetic and environmental factors existed in the production of malformations. The advantage in using IS of mice is that the genetic influence can be kept at a uniform or constant level; this results in a minimum of variables to be considered when interpreting the environmental influences on malformations. (112 refs.) - *A. C. Molnar.*

1287 AUERBACH, ROBERT, & RUGOWSKI, JAMES A. Lysergic acid diethylamide: Effect on embryos. *Science*, 157(3794):1325-1326, 1967.

Injection of lysergic acid diethylamide (LSD) into 7-day pregnant mice caused a 57 percent incidence of grossly abnormal embryos, all with characteristic brain defects. LSD tartrate was diluted in Tyrode's solution and doses of 5×10^{-8} to 1×10^{-6} gm were injected intraperitoneally into mice of strains BALB/CAu, C57BL6/Au, C3H/HeAu, and F_1(BALB/C x 57BL). About 10 percent of control newborn mice had congenital abnormalities. The brain deformities of the LSD group included enlarged or shifted midbrain, improper closure of midbrain and hindbrain regions, and modified fourth ventricles. Other deformities included jaw, eye, and facial abnormalities. No gross abnormalities resulted from injection of LSD after the seventh day of pregnancy. Since the dose of LSD in this study was considered to be relatively low, these results are particularly significant. Extrapolating the dosage to human equivalents is equal to an average exposure at about 16 to 22 days gestation. (9 refs.) - *R. Froelich.*

Department of Zoology
University of Wisconsin
Madison, Wisconsin 53706

1288 KOCHHAR, D. M., LARSSON, K. S., & BOSTRÖM, H. Embryonic uptake of S^{35}-Sulfate: Change in level following treatment with some teratogenic agents. *Biologia Neonatorum*, 12(1,2):41-53, 1968.

Three teratongenic procedures, namely hypervitaminosis A, trypan blue and cortisone administration were investigated for their effect on S^{35}-sulfate uptake in early mouse embryos. Cortisone treatment of the mother inhibited while vitamin A and trypan blue treatments stimulated the embryonic uptake of sulfate. Effect of vitamin A on this metabolic process was found to be transitory. Previously observed morphological disturbances with the same agents suggest that mesodermal changes in affected embryos are foreshadowed by alterations in their metabolism of S^{35}-uptake. (39 refs.) - *Journal summary.*

Rockefeller University
New York, New York

1289 WARKANY, JOSEF, & TAKACS, EVA. Lysergic acid diethylamide (LSD): No teratogenicity in rats. *Science*, 159(3816): 731-732, 1968.

Lysergic acid diethylamide (LSD) in doses of 1.5 to 300 micrograms was given to 55 pregnant rats during periods of organogenesis and on the fourth and fifth day of pregnancy to 34 rats. Examination of the resultant 887 young for congenital defects showed no greater frequency than in controls. These experiments failed to prove that LSD is teratogenic in rats. (6 refs.) - *Journal abstract.*

College of Medicine
University of Cincinnati
Cincinnati, Ohio 45229

1290 D'AVIGNON, M., HELLGREN, K., JUHLIN, I. -M., ATTERBÄCK, B. Diagnostic and habilitation problems of thalidomide-traumatized children with multiple handicaps. *Developmental Medicine and Child Neurology*, 9(6):707-712, 1967.

The physical and mental handicaps in 67 of a total of 112 'thalidomide' children born in Sweden are described, with particular reference to their effect on the children's

schooling prospects. Skeletal malformations of the upper limbs make school work and activities such as dressing and eating difficult; malformations of the legs and feet impair the children's ability to play with others. Hearing impairments result in incomplete articulation, spelling difficulties, and mental fatigue owing to the need for continual concentration. Other disorders, such as facial paresis, which gives the child a blank and 'stupid' expression, and abducens paresis, which makes him turn his head frequently from side to side, are socially disabling and may be misinterpreted by the teacher. Of the 67 children, 3 are mentally retarded. In another 6, the clinical assessment of intelligence is much higher than the intelligence test results. It is highly desirable that these children should be educated at a normal school at a level suited to their intellectual resources, but in view of their multiple handicaps it is not possible to predict whether this will be achieved. (No refs.) - *Journal summary.*

Eugeniahemmet
Stockholm 60, Sweden

1291 APPEL, S. H., DAVIS, W., & SCOTT, S. Brain polysomes; Response to environmental stimulation. *Science*, 157(3790):836-838, 1967.

Polysomes have been isolated from rat brain and characterized by their appearance in the electron microscope and by their sedimentation in sucrose density gradients. Rats were isolated for 3 days in the dark and were then returned to the light for 15 minutes. The polysomes in brain, but not in liver, decreased in rats deprived of light and increased in those stimulated with light. These findings together with an increased capacity for protein synthesis in the brain *in vitro* and *in vivo* suggest that an increase in the activity of messenger RNA in the brain may result from environmental changes. (15 refs.) - *Journal abstract.*

Hospital of University of
Pennsylvania
Philadelphia, Pennsylvania

1292 HOLLIS, JOHN H. Chlorpromazine: Direct measurement of differential behavioral effect. *Science*, 159(3822):1487-1489, 1968.

A retarded child with a high stereotyped rocking rate was conditioned to pull a ball on a reinforcement schedule in which the fixed ratio of rewarded to nonrewarded responses was 100. Results show no rocking movements during ball-pulling; but when ball-pulling was on extinction, rocking returned to its original rate. Chlorpromazine blocked rocking movements during extinction, but had no effect on ball-pulling. Delivery of 1 free reinforcer was sufficient to reinstate ball-pulling after extinction, but the stimulus properties of the free reinforcer were not affected by the drug. (10 refs.) - *Journal abstract.*

Parsons Research Center
Parsons, Kansas 67357

1293 LOESER, JOHN D., & *WARD, ARTHUR A., JR. Some effects of deafferentation on neurons of the cat spinal cord. *Archives of Neurology*, 17(6):629-636, 1967.

Experimentally produced deafferentation of cat spinal cords performed by dorsal rhizotomy, hemicordotomy, or a combination of both revealed spontaneous hyperactivity and firing almost exclusively limited to smaller neurons located in the basal areas of the dorsal horn. Activity recorded from normal cat spinal cords showed virtually no motor neuron firing and minimal spontaneous activity. Studies showed the hyperactive cells to be small, multisynaptic, nonmotor, nonaffected by adjacent dorsal root stimulating, and persistent in their response after higher cord transection. Ascending spinocerebellar tract cells in deafferentated cats showed more spontaneous activity, and greater magnitude and duration of response to dorsal root stimulation than in normal spinal cords. In general, the greatest amount of degeneration following the procedure was in the basal areas of the dorsal horn, which closely correlated to the area found to be most hyperactive. Neurologic deficits following ipsilateral dorsal rhizotomy were paresis, hypotonicity, hyporeflexia, and anesthesia. Sensory changes never improved over prolonged

observation while the others did to some degree. Hemisection of the cord produced mild ipsilateral hemiparesis, hyperreflexia, and spasticity, which improved to an extent and then stabilized. However, no permanent sensory change could be elicited. At the present time, it is still difficult to state whether the hyperactivity is due to increased sensitivity, increase of a neuronal transmitter such as acetylcholine, increased growth of synaptic junctions by the remaining cells, or a change in neuronal membrane characteristics. Furthermore, since the abnormal firing patterns found in this study are similar to those found in convulsive disorders and other neurologic syndromes, it is possible that deafferentation plays a role in the mechanisms of these phenomena. (25 refs.) - *E. Gaer.*

*University of Washington
School of Medicine
Seattle, Washington 98105

1294 GOODLIN, R., & LLOYD, D. Fetal tracheal excretion of bilirubin. *Biologia Neonatorum*, 12(1/2):1-12, 1968.

The contribution of fetal tracheal fluid in the formation and bilirubinoid staining of amniotic fluid was evaluated in fetal rabbits. Fetal tracheal fluid samples were obtained from extrauterine rabbit fetuses maintained in a hyperbaric oxygen chamber. Samples of amniotic fluid were taken from the tail and head region of intrauterine fetuses following placement of a periuterine suture at the level of the fetal neck. Amniotic and allantoic fluids were also obtained at various stages of pregnancy and after tracheal obstruction. These fluids were subsequently analyzed for total volume, rates of formation, spectral absorption, bilirubin and chloride content. This study indicated that fetal tracheal fluid contains bilirubinoid pigments including indirect bilirubin and that tracheal fluid is a possible route of fetal pigment excretion into the amniotic fluid. Extrapolations of these conclusions are made to man in erythroblastosis fetalis and fetal distress. (6 refs.) - *Journal summary.*

Department of Gynecology and
Obstetrics
Stanford University School
of Medicine
Palo Alto, California

1295 BRUCK, ERIKA, ABAL, GÜNER, & ACETO, THOMAS, JR. Therapy of infants with hypertonic dehydration due to diarrhea. *American Journal of Diseases of Children*, 115(3):281-301, 1968.

A controlled study of 59 infants (including 5 MRs) with dehydration (serum sodium greater than 150 mEq/liter) compared electrolyte solution with electrolyte free solution for rehydration. Ss were chosen at random. Thirty Ss (Group A) received "balanced hydrating solution" (sodium 75; chloride, 50; lactate, 25 mEq; and glucose, 66 gm/liter), or, after urine flow was established, "poly-ionic solution No. 2" (sodium, 57; chloride, 50; potassium, 25; phosphate, 7; lactate, 25 mEq; and glucose, 100 gm/liter). Twenty-nine Ss (Group B) received 10 percent glucose solution during the first 24 hours. Blood was analyzed on admission and at 12, 24, and 48 hours for sodium, potassium, chloride, pH, glucose, urea phosphorous, protein, and carbon dioxide. Serum sodium fell more rapidly at 24 hours in Group B but was equal in both groups at 48 hours. The remaining changes in serum chemistries were similar in both groups. While 7 Ss in Group B developed convulsions, none in Group A did. On admission, Ss with seizures had high urea, low pH, and low carbon dioxide content. No other chemical differences were noted. Substitution of ionic solution No. 2 after 12 hours reduced the incidence of seizures. Although it takes longer for total correction of the electrolytes, a poly-ionic solution with 10 percent glucose is recommended for therapy of hypertonic dehydration in children. (23 refs.) - *W. A. Hammill.*

219 Bryant Street
Buffalo, New York 14222

1296 LUEBEHUSEN, HUGH B. Safety seat for parallel bars. *Physical Therapy*, 48 (1):37, 1968.

A safety seat has been designed for patients who must sit down quickly while walking in the parallel bars. The canvas seat is easily stored on the bars where it is quickly available. (No refs.) - *A. Huffer.*

Petersburg General Hospital
Petersburg, Virginia

1297 TOOTLE, DONALD O. Modified Loftstrand crutch. *Physical Therapy*, 48(1):36-37, 1968.

A Loftstrand crutch has been modified to permit a patient greater ease of movement. By attaching a flexible ankle crab cane to the base of the crutch, the advantages of both devices were utilized. (No refs.) - *A. Huffer.*

Riverside Methodist Hospital
Columbus, Ohio

1298 FORD, VERA A. A modified slide board. *Physical Therapy*, 48(1):34, 1968.

A slide board has been modified to enable easy transference of a patient between bed and wheel chair. When a seat board is affixed to grooves in the slide board, a gentle push is all that is needed to transfer the patient. (No refs.) - *A. Huffer.*

Orthopedic Hospital
Los Angeles, California

1299 DAVID, F. N., & KIM, P. J. Matched pairs and randomization sets. *Annals of Human Genetics*, 31(1):21-27, 1967.

Analysis of matched-pair data in s dimensions by means of a randomization technique was devised when a need arose for ascertaining whether certain teaching methods produced significant improvement in the test scores of MR children. The approach is not only an alternative to the $s = 1$ case but can even be extended to the multi-test situation. The statistical methods and examples are provided in detail. The test carries only a minimum of assumptions. (3 refs.) - *J. Huffer.*

University of California
Berkeley, California

DEVELOPMENT

Physical, Emotional, and Social

1300 CHORUS, A. Varieties of specifically retarded maturation in mental deficiency. *Tijdschrift Voor Zwakzinnigheid En Zwakzinnigenzorg*, 4(4):139-145, 1967.

Four types of delayed maturation in MRs were differentiated and a follow-up study was done on pupils who had left special schools 10 years prior to the time of the investigation. Delayed maturation was defined as development that eventually proceeded to a normal or nearly normal level. Extensive follow-up data were available for 6.5 percent (291) of the 1956 totality of students (4,592) leaving special schools in The Netherlands. Ss were visited at home and tested individually 10 years later to assess the prevalence, development structure, and conditions of the 4 types of delayed maturation (authentic type, partially efficient type, inhibiting personality type, and deprivation type). An IQ of 90 or more was attained by 20.8 percent of the group. Only 6.7 percent were unable to keep a normal job. The variety of delayed maturation caused by cultural deprivation or by inhibiting personality factors could not be ascertained in this study. (9 refs.) - *A. Thomey.*

Hoogleraar Psychologie Universiteit
Leiden
Leiden, The Netherlands

1301 BERKSON, GERSHON. Maturation defects in kittens. *American Journal of Mental Deficiency*, 72(5):757-777, 1968.

The effects of hypoxia, propylthiouracil, rearing, and food-limitation on physical and behavioral measures of maturation rate were

studied in 4 experiments. Hypoxia and food limitation had no effect. Propylthiouracil produced defects on most but not all tests. Rearing with the mother attenuated the propylthiouracil effect on some measures. (11 refs.) - *Journal abstract.*

1640 West Roosevelt Road
Chicago, Illinois 60608

1302 TIZARD, BARBARA. Observations of over-active imbecile children in controlled and uncontrolled environments: I. Classroom studies. *American Journal of Mental Deficiency*, 72(4):540-547, 1968.

Two groups of severely subnormal children, rated very overactive and not overactive, were observed during free play. The overactive children moved about significantly more often than the control children but were not rebuked more often nor did they receive more attention from their teachers. They were not more aggressive than the control children, but they made significantly fewer friendly contacts. The classical hyperkinetic syndrome was not seen; instead the overactive children showed a wide range of personality. There was some evidence that they had suffered brain damage of a kind different from that found in the control group. (7 refs.) - *Journal abstract.*

Institute of Education
57 Gordon Square
London, W. C. 1., England

1303 TIZARD, BARBARA. Observations of over-active imbecile children in controlled and uncontrolled environments: II. Experimental Studies. *American Journal of Mental Deficiency*, 72(4):548-553, 1968.

The amount and nature of the movement of 2 groups of severely subnormal children, rated either as very overactive or not overactive, were measured in an experimental room. Each child was tested 4 times, with and without toys. There was no significant difference in the movement scores of the 2 groups and no significant habituation in the amount of movement recorded over the 4 sessions for either group. Stimulus variation did not affect the overall movement score, although it did affect the nature of the children's activity. (11 refs.) - *Journal abstract.*

Institute of Education
57 Gordon Square
London, W. C. 1., England

1304 CONNOLLY, KEVIN, & STRATTON, PETER. Developmental changes in associated movements. *Developmental Medicine and Child Neurology*, 10(1):49-56, 1968.

Four tests of associated movement - modified version of Zazzo's finger-lifting test, the Fogs' clip-pinching test, the feet-to-hands test, and a new finger-spreading test - were given to 658 normal children whose ages range from 4 years 9 months to 15 years 8 months. The incidence of associated movements shows marked changes with age. The various tests are maximally sensitive at different stages in development as follows: clip-pinching 5-13 years, feet-to-hands 8-13 years, finger-spreading 10 years to beyond the age range studied, finger-lifting from 5 onwards depending on the finger examined. The correlations between the tests were all positive and largely significant, indicating some common factor underlying the different kinds of performance which were examined. (6 refs.) - *Journal summary.*

Sheffield University
Sheffield 10, England

1305 ABERCROMBIE, M. L. J., LINDON, R. L., & TYSON, M. C. Direction of drawing movements. *Developmental Medicine and Child Neurology*, 10(1):93-97, 1968.

The movements of the hands of children were studied when they were copying figures with one hand, or with both simultaneously, their hands being hidden from them. In single movements, horizontal lines were drawn preponderantly dextrad, vertical lines downwards, and circles anticlockwise - i. e., vertical and horizontal components tended to be in the same direction in both hands. In

simultaneous movements, the vertical component tended to be in the same direction and the horizontal component in the opposite direction in the two hands. This tends to lead to error in copying two parallel oblique lines simultaneously. Brain-injured children had a greater tendency than normal children to make the horizontal component of single movements in opposite directions - i. e., in this respect their single movements were more like simultaneous movements made by themselves and by normal children. It is suggested that simultaneous movements follow a more primitive pattern than single movements, and that the condition in brain-injured children results from weaker lateralization. (2 refs.) - *Journal summary.*

Bartlett School of Architecture
University College
London, England

1306 FREEMAN, ROGER D. Controversy over "patterning" as a treatment for brain damage in children. *Journal of the American Medical Association*, 202(5):385-388, 1967.

Procedures developed by the Institutes for the Achievement of Human Potential in Philadelphia, Pennsylvania, are described in terms of the validity of patterning as a technique for treatment of brain damage in children. The rationale for the methods of the institutes is based on the principle that "ontogeny recapitulates phylogeny" and that failure to proceed through a certain sequence of developmental stages in mobility, language, and competence in the manual, visual, auditory, and tactile areas shows poor "neurological organization" and may indicate "brain damage." In more severe cases, patterns of passive movements are imposed in an attempt to reproduce those normal activities which would have been the product of the brain level had it not been injured. Patterning techniques are usually employed for 5 minutes at least 4 times daily, 7 days a week. Other techniques involve sensory stimulation; rebreathing of expired air with a plastic face mask for 30 to 60 seconds once each waking hour; restriction of fluid intake, salt, and sugar; early reading; and techniques - such as hand, eye, and music restrictions, sleep and rest positioning, and visual and gait training - directed at establishing uniform cortical hemispheric dominance. Enhancement of one function is felt to result in improvement in other areas. This theory has also been applied to normal development. Objections to this method are cited as: (1) ignorance of the natural clinical course of some patients with brain injuries; (2) assumption that the method treats the brain itself while other methods are "symptomatic"; (3) conclusion that because the full potential of the brain is not known, one can conclude that each child who is not genetically defective may have above-average intellectual potential; (4) employment of parents as therapists; (5) forceful prevention of a child's self-motivated activities; (6) assertions which increase parental concern; (7) improvements due to specific factors; (8) validity and reliability of test instrument; and (9) statistical defects. (31 refs.) - *B. Bradley.*

2600 North Lawrence Street
Philadelphia, Pennsylvania 19133

1307 BERMAN, MERRILL I. Mental retardation and depression. *Mental Retardation* (AAMD), 5(6):19-21, 1967.

In the psychiatric evaluation of MR patients referred mainly for misbehavior, it became apparent that rather than this presenting complaint, the great majority was suffering from a deep-seated depression. It became apparent that rather than presenting classical symptoms of overt depression, this population presented angry, aversive behavior as a defensive method of dealing with or avoiding feelings of hopelessness, helplessness, and severe low self-esteem. It was also noted that the staff in the institution also suffered from feelings of futility and depression which contributed to the cycle of maladaptive behavior. It is suggested that we redefine our operational definitions of depression to include a more descriptive behavioral diagnosis, and by becoming aware of this manifestation of depression secondary to institutionalization, we can therapeutically and psychopharmacologically manipulate the environment to make it more goal-directed and to help deal with this state of depression. Group therapy and group counseling for both patients and staff are also recommended for therapeutic manipulation. (9 refs.) - *Journal abstract.*

U. S. Public Health
Service Hospital
San Francisco, California

1308 MENOLASCINO, FRANK J. Psychiatric findings in a sample of institutionalized mongoloids. *Journal of Mental Subnormality*, 13(25):67-74, 1967.

The clinical-psychiatric findings in a randomly selected sample of 95 mongoloid institutionalized MRs demonstrated that 35 had emotional disturbances. There were 54 males and 41 females (mean CA, 13.2). The individual psychiatric technique used for the children was a modified diagnostic play interview. Adults and adolescents were assessed for personality functioning and signs/symptoms of behavioral disturbance. There was a non-significant correlation between presence of emotional disturbance and EEG abnormality. There were no significant correlations between emotional disturbance and either physical findings, neurological findings, dermatoglyphic findings, cytogenetic findings, or personal/clinical historical "at risk" factors. The types of psychiatric disturbance included chronic brain syndrome with behavioral reaction (49 percent), chronic brain syndrome with psychotic reaction (11 percent), adjustment reaction of childhood (22.9 percent), psychoneurosis (8.6 percent), schizophrenia (5.7 percent), and personality trait disturbances (2.8 percent). The frequency of emotional disturbance was high when compared to the view that mongoloids are immune to such disorders. The presence and type of disorder were highly related to the patient's subsequent reactions and reasons for institutionalization. Psychiatric disturbance in Down's syndrome represents an opportunity to practice therapeutic and preventive principles. (19 refs.) - *R. Froelich.*

Nebraska Psychiatric Institute
University of Nebraska College
of Medicine
Omaha, Nebraska

1309 CHESS, STELLA. Psychiatric factors. In: Bortner, Morton, ed. *Evaluation and Education of Children with Brain Damage*. Springfield, Illinois, Charles C. Thomas, 1968, Chapter 4, 95-108.

The behavior problems demonstrated by brain-injured (BI) children are described for the purpose of aiding teachers in their work with this population. After the psychiatrist has received a referral for diagnostic study, the context of the request must be determined. An overall psychiatric evaluation is most difficult due to lack of clues as to the precise problem area - since the child's answers are, in part, structured by the examiner's questions. A specific focus for the psychiatric evaluation may lead to more valid data. The BI child is not a generalized stereotype but a child with a specific type of difficulty who requires individual treatment. This extends to children whose structural organization deviates from the normal range and may cover a wide variation of capacity for motility, expressiveness, attentiveness, selectivity of interest, and perseverance. The method in which aberrant behavior is demonstrated is closely related to environment. A description of the environment in which the child functions poorly or adequately does not indicate the diagnosis, it only demonstrates directions for more investigations. An individual child's assets and liabilities ought to be explored both in terms of the structure of injuries and his personality. A description of the behavior of BI children ought to note some psychiatric factors available for classroom use. (9 refs.) - *B. Bradley.*

1310 COBB, HENRY V. The attitude of the retarded person towards himself. In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, p. 62-74.

MRs may have difficulty in understanding how and why they are different from other family members. They develop a complexity of self-referent perceptions, attitudes, and behaviors which influence their relationships. These self-attitudes are products of learning which occur in the developmental years. The MR child is handicapped in learning in that the developmental stages of maturation tend to be delayed and motor and cognitive disabilities affect the learning process. In addition, excessive nurturance, demand, or neglect may impede and distort the normal process of self-discovery and self-evaluation. The MR follows the same pattern of self-development as the normal child. This includes: (1) primary differentiation, (2) identity, (3) self-portrait, (4) level of aspiration, (5) systems of control and defense, and (6) the adolescent transition. The most critical stage of self-development is in the transition from childhood to adulthood. However, the stresses of this time can be reduced if the experiences of childhood have been positive and have yielded a satisfying self-image and if the opportunities for responsibility and dependency have been managed carefully. (No refs.) - *B. Bradley.*

1311 O'NEIL, LAWRENCE P. Evaluation of relative work potential: A measure of self-concept development. *American Journal of Mental Deficiency*, 72(4):614-619, 1968.

As an approach to understanding self-concept development the study measured the ability of MR adolescents to rate relative work potential. A pictorial paired comparison method was used with staff members providing a standard for evaluation. Three hypotheses were presented and the results generally supported them. The trainees were able to use work standards to evaluate potential for community placement for themselves and their peers. Trainees later employed were more consistent raters. The results did not establish that self-concept development and level of work adjustment were clearly related. Results support emphasis on self-concept development in habilitation programs. (8 refs.) - *Journal abstract.*

University of Pittsburgh
Pittsburgh, Pennsylvania 15213

1312 DOMINO, GEORGE. The identification of behavioral aggression in the mentally retarded. *Training School Bulletin*, 64(2): 66-72, 1967.

Behavioral aggression in the MR adolescent was successfully measured by 46 items in the Sonoma Check List (SCL). The initial study was done at 6-week summer camp for MR male adolescents (IQs, 50 to 90). Behavioral aggression was observed by 5 male counselor-observers (CO) using Flanagan's critical incident technique. During the last week of camp, the COs were asked to complete SCLs for the 60 adolescents studied. Of the 210 SCL items, 32 correlated positively and 14 correlated negatively with the COs' rating of aggressive behavior (p=.05). These 46 items comprised the Behavioral Aggressiveness (BA) scale. Positive items included: active, aggressive, awkward, bossy, cruel, deceitful, defiant, demanding, disobedient, energetic, excitable, hostile, impatient, impulsive, inattentive, irritable, loud, mean, messy, moody, obnoxious, persistent, quarrelsome, quiet, rebellious, restless, show-off, sloppy, tense, uncooperative, and violent. Negative items included: calm, controllable, easy-going, educable, friendly, good-natured, likeable, manageable, passive, playful, slow, submissive, and well-behaved. In a cross-validation study, the BA scale successfully differentiated a preadolescent institutionalized group of 18 MR boys with behavioral problems from a similar group of cooperative boys. (14 refs.) - *R. Froelich.*

Department of Psychology
Fordham University
Bronx, New York

1313 FOSTER, RAY, & FOSTER, CAROL. The measurement of change in adaptive behavior. *Project News of the Parsons State Hospital and Training Center*, 3(9):21-29, 1967.

The tentative results of a validity preparation study being conducted at Parsons State Hospital and Training Center (Parsons, Kansas) to assess the effects of different treatments on Ss with equal initial adaptive behavior (AB) check-list ratings indicate that AB is reversible and that the intensive operant approach used in the Demonstration Program for Intensive Training of Institutionalized MR girls is more effective than traditional approaches in reversing behavior. There were 2 groups of female Ss, all of whom had been members of the original Parsons AB sample and had been pretested with the preliminary AB check-list in 1965. The 26 experimental group Ss were currently enrolled in the Demonstration Project while the 15 members of the control group had never been assigned to the Project. Both groups were matched for CA (control group mean, 12.8 yrs; E group mean, 11.5 yrs), measured intelligence level (control group mean, 3.2 yrs; E group mean 2.8 yrs), and for adaptive behavior level (control group mean, 2.9; E group mean, 2.8). Form 2 of the AB check-list was used as a post-test measure in 1967. The overall pretest/post-test reliability rating was 85.5 percent. Total score increased significantly for the E group while it decreased slightly for the control group. A significant increase in 3 domains of the check-list occurred for the younger members of the E group. Fifty percent of the E group, as opposed to 13 percent of the controls, showed an increased AB rating. The ratings for 31 percent of the E group and 40 percent of the controls remained the same, while 19 percent of the E group and 47 percent of the controls registered a decrease. (4 refs.) - *J. K. Wyatt.*

Parsons State Hospital
and Training Center
Parsons, Kansas

1314 NIHIRA, KAZUO. A study of environmental demands as an aid to construct a behavior rating scale. *Project News of the Parsons State Hospital and Training School*, 3(9):2-21, 1967.

Classification of survey findings concerning the environmental demands imposed on MRs by 58 psychiatric aides in 2 Kansas institutions (Parsons State Hospital and Winfield State Hospital), by 60 special education teachers from the public school systems of Kansas and Missouri, and by 158 attendants from 23 Michigan day-care centers revealed the presence of 2 broad categories of critical behaviors: those due to skill and ability deficiencies, and those due to emotional and conduct disturbances. Questionnaires based on the critical incident technique were used in an effort to identify prevailing behavior norms, prevalence of specific behavior norms, and degree of conformity to specific norms. The "lack of skill and ability" category included lack of self-help, communication, academic, occupational, and economic skills. The "emotional and conduct disturbances" category consisted of incidents involving anti-social destructiveness, rebelliousness, immaturity in socialization, withdrawal, peculiar and eccentric habits, sexual maladjustment, and psychological disturbances. Analysis of the differential demands in the settings surveyed revealed that as environment changed from institution to community, behavior emphasis shifted from self-help skills to emotional and conduct disturbances. The major goal of this adaptive behavior research project is to develop an adaptive behavior assessment instrument that can be used for diagnosis, selection in behavior modification grouping, and prediction of adaptability in specific environments. (14 refs.) - *J. K. Wyatt.*

Parsons State Hospital
Parsons, Kansas

1315 BABCOCK, S. DONALD, & DRAKE, MILES E. A study of the behavioral changes of sixty institutionalized female retardates during a three month course of treatment with monosodium glutamate. *Training School Bulletin*, 64(2):49-57, 1967.

Supplementing the diet of 30 institutionalized MR females with monosodium glutamate in the form of 1-Glutavite appeared to benefit some states of learning and social readiness, particularly social contact. These results were obtained in a laboratory and behavioral study conducted with 60 MR females drawn from 2 diagnostic categories: mongoloids and those whose defects were other than enzymatic, metabolic, or hormonal. The Ss were divided into 4 groups of 15 each, with 1 group from each of the 2 diagnostic categories serving as controls. Mean IQs for the groups ranged from 23.0 to 31.0, while the mean CA range was between 21.3 and 22.8. The regimen consisted of 10.5 gm monosodium l-glutamate daily in the form of 1-Glutavite given in teaspoon packets 3 times a day. Each patient was evaluated for motor coordination, social contacts, communication, and organized play. No significant laboratory or behavioral changes occurred. When the mongoloid and non-mongoloid groups were compared, an improvement of communication was noted in the non-mongoloid group receiving 1-Glutavite, while in the mongoloid group receiving 1-Glutavite there appeared to be an increase in inhibition. (24 refs.) - *R. Froelich.*

Vineland Training School
Vineland, New Jersey 08360

1316 PRICE, S. A., & SPENCER, D. A. A trial of Beclamide (Nydrane) in mentally subnormal patients with disorders of behavior. *Journal of Mental Subnormality*, 13(25):75-77, 1967.

The use of Beclamide (Nydrane) with MR patients chosen as representative of the most difficult management problems in a hospital resulted in significant (t test, $P < .001$) behavior improvement in 19 of 22 Ss (12 males; 10 females; CA, 7-30; IQ, 30-60). All Ss displayed aggressive and destructive behavior prior to the Beclamide treatment, and 21 of them exhibited disordered behavior in spite of treatment with tranquilizing and/or anticonvulsant drugs. A double-blind technique was used to analyze Beclamide effects. Improvement was calculated by comparing incidence of disturbed behavior before, during, and after use of the drug. Epileptic Ss exhibited slightly more disturbed behavior before Beclamide treatment and showed greater behavioral improvement while taking the drug than non-epileptics. Ss with initial IQs below 30 made greater gains than Ss with scores above 30. Both before-treatment and improvement scores were greater for Ss who had been hospitalized for more than 9 years than for Ss hospitalized less than 9 years. Male and

female reactions were not found to differ. Appreciable carry-over effects for the drug were not found. The drug proved to be easily administered, was well tolerated, and did not produce undesirable effects. (4 refs.) - *J. K. Wyatt.*

Westwood Hospital
Bradford 6, England

1317 GAURON, EUGENE F., & ROWLEY, VINTON N. Infantile shock traumatization and the mitigating effects of tranquilizing drugs. *Journal of Genetic Psychology*, 111(2):263-270, 1967.

The minor tranquilizing drugs (hydroxyzine, meprobamate, and diazepam) administered during avoidance conditioning improved the performance of shock traumatized rats. One-half of 64 Sprague-Dawley rats were given 0.2 milliampere of inescapable shock for 3 minutes daily from day 10-25. During the avoidance conditioning begun on day 75 or day 112, matched pairs were assigned to treatment groups of: (1) chlorpromazine (2 mg/kg), (2) thioridazine (2 mg/kg), (3) prochlorperazine (0.4 mg/kg), (4) saline, (5) meprobamate (32 mg/kg), (6) hydroxyzine (2 mg/kg), or (7) diazepam (0.4 mg/kg). Conditioning was done in a box divided by a barrier. A buzzer provided the conditioned stimulus and a shock the unconditioned stimulus. Comparison of the number of errors and latency in the groups showed that the shocked animals did more poorly than the controls. The major tranquilizers (1-3) decreased the difference between the groups by increasing the latency and errors of the controls. The minor tranquilizers (5-7) improved the learning of the shocked animals and decreased the learning deficit caused by the early shocks. The major tranquilizers appear to decrease recent memory and to have an adverse effect on motor function. (11 refs.) - *W. A. Hammill.*

State Psychopathic Hospital
Iowa City, Iowa 52240

1318 GLASER, KURT, & CLEMMENS, RAYMOND L. Specific learning disabilities: II. Psychosocial aspects. *Clinical Pediatrics*, 6(8):487-491, 1967.

Emotional reaction of the child with learning difficulties can complicate the severity of specific learning disabilities and interfere with proper treatment. (Specific learning disability is the name given to minimally brain damaged individuals whose learning ability in reading or speech is in marked contrast with other areas of achievement.) The defensive reactions brought into play to decrease the discomfort of anxieties produced by this disorder include avoidance, projection, and attention-getting. Emotional reactions of the family, teachers, and peers to hyperkinesis are usually unsympathetic and non-constructive. Prevention and treatment should include a combination of one or more of the following: drug therapy, psychotherapy, parent counseling, teacher counseling, and educational management (small class size, distraction-free classroom, special educational methods, and specially trained teacher). The physician should consider all available resources of correction when dealing with learning disabilities. He should assume a leadership role in the community and encourage programs for the treatment of learning disabilities and their emotional concomitants. (3 refs.) - *W. Asher.*

Rosewood State Hospital
Owings Mills, Maryland 21117

1319 BETTELHEIM, BRUNO. *The Empty Fortress: Infantile Autism and the Birth of the Self.* New York, New York, Free Press, 1967, 484 p. $9.95.

The nature, origin, and treatment of infantile autism is presented in terms of personal investigations and experiences, case histories, and a review of the literature. In contrast to victims of the concentration camps who had lost their humanity, autistic children withdraw from the world before their humanity ever develops. The tendency to make children independent as early as possible or to perpetuate dependency is followed at the expense of mutuality and may be a factor in infantile autism. The infant's ability and opportunity to contribute to his own satisfaction with mutuality greatly influence what autonomy he will achieve. Human beings seem to have critical periods and autistic withdrawal may appear during the first 2 critical periods of infant development. Autistic children do not appear to feel pain but the possibility exists that they are more sensitive to pain of all kinds. The 3 case histories presented demonstrate that autistic children do relate to other people but not in a positive way. The so-called feral children are probably the result of extreme emotional

isolation combined with threatening experiences. The majority of those autistic children treated at the Orthogenic School have returned to society. There is much greater agreement among workers in the field about the nature of infantile autism than the origins and causes of it. This book is an excellent representative of the psychoanalytic view of infantile autism. (194-item bibliog.) - *R. Froelich.*

CONTENTS: In the Region of Shadows; Where the Self Begins; Strangers to Life; A Note on Passionate Indifference; Laurie; Marcia; Joey; Persistence of a Myth; Etiology and Treatment; On the Nature of Autism.

1320 TANAKA, MACHIKO. A study of the family dynamics of children suffering from early infantile autism. *Japanese Journal of Child Psychiatry*, 7(4):215-230, 1967.

The families of 28 autistic children were studied to determine the relationship of family dynamics to early infantile autism. The results of psychiatric interviews and psychological tests given to the parents were compared with those obtained from a control group of over 200 families. Almost half of the autistic group parents could be classified as immature while only a few of the control group could be so classified. These immature parents appeared strikingly similar to parents of hebephrenic patients. Since neither parent could compensate for the parental inadequacy of the other, they had a pathological influence on the ego development of their child. The child had no way of developing healthy family relationships and ego strength. (27 refs.) - *A. Huffer.*

No address

1321 MNUKHIN, S. S., ZELENETSKAYA, A. E., & ISAEB, D. N. O sindrome "rannego detskogo autizma" ili sindrome kannera u detei. (On the syndrome of "early infantile autism" or Kanner's syndrome in children.) *Zhurnal Nevropatologii i Psikhiatrii*, 67(1): 1501-1506, 1967.

The first publication pertaining to infantile autism in the USSR is reported. These 44 cases (CA, 2-14 yrs) had weak reality contacts, no interests, inadequate emotional reactions, and lacked directed action. At the core of their personality problem was a reduction of psychic energy and varying qualitative immaturity of intellectual development. (23 refs.) - *C. A. Pepper.*

No address

1322 HOEJENBOS, E., & KRONENBERG, J. W. Symposium on the autistiform profoundly mentally subnormal child: I. Sensation and retraction. *Journal of Mental Subnormality*, 13(25):53-57, 1967.

"Retractionsyndrom," a contact disturbance found in both normals and MRs, is characterized by withdrawal, reduction or absence of reciprocal understanding and contact, reduction or absence of eye contact, strong sensitivity toward physical changes, absorption in strange and impressive behavior, anxiety, tension, and repetition of movements with an almost magical meaning. Forms of this syndrome include: situation-influenced, psychogenic, fluctuating, intermittent, periodic, and massive. Provision of infantile and baby-like security situations such as physical warmth, vibration, and touching has been associated with improvement. Treatment based on physical manipulation rather than on verbal interaction may be more effective with MRs. (15 refs.) - *J. K. Wyatt.*

Hendrik van Boeijen-
Oord Institution
Assen, Netherlands

1323 KAHN, J. H., & REDMAN, JENNIFER. Social factors affecting mentally subnormal children. *Nursing Mirror*, 125(6):139-141, 1967.

In order to determine some of the commonly held attitudes and expectations regarding mentally handicapped children, interviews were set up with health visitors, teachers of educationally subnormal children, and student social workers. Except for a set of photographs in which Ss were asked to pick out the MRs, each interview was structured differently. The photographs were used as a stimulus to discussion. The health visitors seemed to be primarily concerned with the parents' problems and felt that a physical appearance of subnormality eased the problem since a lower standard of social behavior

would be expected by society. Teachers of educationally subnormal children were resistant to selecting MRs from photographs. They felt that reliable judgments cannot be made on the basis of physical appearance alone. They also appeared unwilling to reveal or rely on irrational criteria. First-year social work students indicated that MRs would differ from normals in terms of personality as well as intellect. Unlike the health visitors, they felt that physical abnormalities increased parents' difficulties. A general description of an MR was constructed from the responses of the 3 groups. Its emphasis was on negative expectations and traits. Expectations of low achievement by supportive adults would tend to give the child a non-achieving image of himself and prevent him from realizing his fullest potential. (No refs.) - *E. F. MacGregor.*

No address

1324 WEISS, DAVID, & WEINSTEIN, EUGENE. Interpersonal tactics among mental retardates. *American Journal of Mental Deficiency*, 72(5):653-661, 1968.

This study explores the area of techniques of interpersonal relations among retardates. Institutionalized and non-institutionalized retardates are compared in order to investigate possible differences in the employment of interpersonal tactics attributable to the different life situations. The most salient finding in this study is the retardate's dependency upon the manipulative tactic of asking in his daily interaction. While this is generally true of both sample populations, it is predominant among the noninstitutionalized retardates. Among institutionalized retardates, a tactic or reciprocity appears to play a minor supporting role, while this tactic is almost non-existent in the non-institutionalized group. (11 refs.) - *Journal abstract.*

Department of Sociology
Tusculum College
Greeneville, Tennessee 37743

1325 Letter to the Editor. *Australian Children Limited*, 3(1):27-29, 1967. (Letter).

The MR is being taught the social behaviors of eating, talking, and to an extent, coping with fear and anger, but he is being taught little about the control of his sexual needs. This lack of education may precipitate overt masturbation, homosexuality, indecent exposure, rape, or assault. Psychiatrists, psychologists, law enforcement officials, and parents must work together to remedy this educational gap. (No refs.) - *G. Trakas.*

No address

Language, Speech, and Hearing

1326 SEMMEL, MELVYN I., BARRITT, LOREN S., BENNETT, STANLEY W., & PERFETTI, CHARLES A. A grammatical analysis of word associations of educable mentally retarded and normal children. *American Journal of Mental Deficiency*, 72(4):567-576, 1968.

A word association task was administered to 2 groups of MR Ss and 2 groups of normal Ss. The free-associate responses were analyzed using a grammatical coding system devised by the authors. The results revealed the highest level of same-form-class (paradigmatic) responding in the older normal Ss and the lowest incidence of paradigmatic responses in the institutionalized retardates. The equal MA normal and public school retarded Ss produced an intermediate number of paradigmatic responses. A significant interaction was found between subgroups and grammatical form class of responses. (18 refs.) - *Journal abstract.*

The University of Michigan
Ann Arbor, Michigan

1327 RYBOLT, GAYLORD A. A factorial analysis of the semantic structures of retarded adolescents. *American Journal of Mental Deficiency*, 72(4):512-517, 1968.

Seventy-nine EMR students (mean CA, 15.5; mean WISC IQ, 72) participated in an investigation of the usefulness of a modified semantic differential scale in determining the

semantic structures of retarded adolescents. The modified Semantic Rating Scale consisted of 5 concepts (fire, sword, America, me and mother) and 26 scales for 125 concept-scale pairings. Each S responded once for each of the concepts on each scale. The 395 responses received for each scale were intercorrelated and factor analyzed by the method of principle axes. The extracted factors were then rotated by using the varimax system. The results were similar to those frequently reported for MR populations, and 3 factors out of 4 could be labeled. These were evaluation, potency, and activity. The effectiveness of this technique is dependent upon the reliability or consistency of the retardates' responses. (14 refs.) - *B. Bradley.*

University of Oregon
Eugene, Oregon

1328 MILGRAM, NORMAN A., & FURTH, HANS G. The regulatory role of language in systematic search by trainable retardates. *American Journal of Mental Deficiency*, 72 (4):620-621, 1968.

The effect of a verbal habit, enumeration, on systematic search activity was investigated in institutionalized trainable retardates. Ss made 19 consecutive choices in searching for a candy reward behind one of 25 covered windows and were uniformly successful on the twentieth trial, by experimental prearrangement. Ss who counted 1, 2, 3 . . . as they made their choices improved from the first to the second search session and also made fewer repetitive choices, i. e., searching behind the same window more than once during a search session. It was concluded that enumeration is a well-practiced habit in trainable retardates and serves to minimize haphazard search activity. (1 ref.) - *Journal abstract.*

Catholic University of America
Washington, D. C. 20017

1329 CAWLEY, JOHN F. Psycholinguistic characteristics of preschool children. *Training School Bulletin*, 64(3):95-101, 1967.

Three groups of preschool children, (normals, slow learners, and MRs) who were placed in a 1-year headstart program stressing psycholinguistics demonstrated substantial progress. The majority of the Ss were Negro. The Stanford-Binet Intelligence Test and the Illinois Test of Psycholinguistic Abilities were administered in September, 1965 and again in June, 1966. All groups showed significant gains ($p=.05$) on the post-test performance of the ITPA. The MR group evidenced the most growth, yet their level of performance remained inferior to the other 2 groups. The correlation for the test-retest varied for each group. This variability among the r's might be given further study. The average and slow learner groups were quite similar in their pretest and post-test scores as well as in their total profile. The language profile of the MR gave evidence of more irregularity. The advisability of grouping children according to their psycholinguistic abilities rather than on a basis of IQ is questioned. (12 refs.) - *M. L. Shelley.*

University of Connecticut
Storrs, Connecticut 06268

1330 HAMMILL, DONALD D., MYERS, PATRICIA I., & IRWIN, ORVIS C. Certain speech and linguistic abilities in subclasses of cerebral palsy. *Perceptual and Motor Skills*, 26(2):511-514, 1968.

Five measures of speech and linguistic ability were used to evaluate differences between athetoids and spastics matched on CA and IQ. The measures used were Integrated Articulation Test, speech articulation ratings, Abstraction Test, Sound Discrimination Test, and the Peabody Picture Vocabulary Test. The spastic children were superior to athetoid children on ratings of speech intelligibility and ability in articulation. The differences between the 2 groups on the sound discrimination, abstraction and vocabulary tests were nonsignificant, thus no significant differences were found between subclasses in auditory decoding as measured. (11 refs.) - *Journal abstract.*

Temple University
Philadelphia, Pennsylvania 19140

1331 MYSAK, EDWARD D. Disorders of oral communication. In: Bortner, Morton, ed. *Evaluation and Education of Children with Brain Damage*. Springfield, Illinois, Charles C. Thomas, 1968, Chapter 1, p. 15-43.

Oral communication and related disorders are described in terms of their effect upon the education of central nervous system (CNS)

impaired children. Practical suggestions are included to aid the teacher in improving oral communication in the classroom. Children with CNS problems usually have oral communication disturbances which lead to learning problems within the school. Transmission of information by the teacher for reception by the children is a primary function of education. The basic method usually involves oral symbols or oral teaching. Since CNS-involved children may have various types of oral-communicative disorders, the teacher must distinguish between (1) a learning disability and a problem in receiving and comprehending oral symbols and (2) a learning disability and a problem in formulating and expressing oral symbols. There seems to be a reciprocal and positive relationship between perceptual-conceptual development and oral-symbolic development. Various types of motor deficits and experiential deprivations may also contribute to learning problems. Some perceptual behavior syndromes also may be related to learning difficulties such as: perseveration, distractibility, fixation, disinhibition, over-response, catastrophic response, and withdrawal. CNS involvement may affect auditory functioning, speech, sound maturation, and oral symbolic development. The child's ability to use oral-linguistic symbols is a major problem for the teacher. Reports from literature surveys, case history data, and studies illustrate some difficulties in oral-linguistic functioning. Facilitation of communication during oral teaching is divided into speech production and speech content. In speech production the emphasis is placed on the preparation of the environment and the children so that they can receive the message. Speech content depends upon efficiency in transmission of the message. (18 refs.) - *B. Bradley.*

1332 ZANER, ANNETTE R. Hearing Impairment. In: Bortner, Morton, ed. *Evaluation and Education of Children with Brain Damage.* Springfield, Illinois, Charles C. Thomas, 1968, Chapter 2, p. 44-63.

Hearing problems are described in terms of educational therapy, incidence and prevalence, and audiological evaluation of the neurologically impaired child. Two classifications of hearing impairment are considered: peripheral and non-peripheral. Peripheral impairment is defined as diminished auditory sensitivity (measured by decibels) which affects the person's ability to hear. This can relate to the end organ or the auditory nerve. Non-peripheral impairment may imply dysfunction of the auditory cortex or auditory nerve. There is considerable controversy relating to the definition and nature of hearing impairments. Pure tone audiometry is cited as the most frequent means of evaluating hearing sensitivity. Due to difficulties in examining the hearing sensitivity of children, both formal and informal procedures may be employed. These should include more than one test of each type. The child with a peripheral hearing impairment is considered readily identifiable due to consistent and early lack of response to sound as well as characteristic tonal quality. If this impairment is not complicated by other disorders, he may be easily evaluated. Validity of some previously defined auditory disorders is questioned in terms of educational usefulness. Differential diagnosis should be dynamic so that tentative data can be revised after training with specific methods. Clinical data seem to indicate a heterogeneous group of children who lack speech development and show apparent non-peripheral hearing impairment. The total behavioral pattern of such children should be analyzed. Audiological evaluation of the neurologically impaired child may involve a complexity of behavior problems as well as language difficulties. (50 refs.; 52-item bibliog.) - *B. Bradley.*

1333 RENEAU, JOHN P., & MAST, ROBERT. Telemetric EEG audiometry instrumentation for use with the profoundly retarded. *American Journal of Mental Deficiency*, 72(4): 506-511, 1968.

An EEG telemetry system specifically adapted for use in the assessment of audition and behavior in severely retarded children is described. The system is unique in that the subject requires neither restraint or sedation for its effective use and time related records are available on line. (14 refs.) - *Journal abstract.*

Central Wisconsin Colony
Madison, Wisconsin

1334 LAMB, NOELLE L., & GRAHAM, JAMES T. GSR audiometry with mentally retarded adult males. *American Journal of Mental Deficiency*, 72(5):721-727, 1968.

The modification of galvanic skin response (GSR) audiometry described in Shimizu, Hardy, and Hardy (1965) was administered to 20 normal adult male Ss and 20 MR adult male Ss.

The results for the normal S group support the contention of the previous study that the modification does not reduce the efficacy of the technique. GSR threshold was obtained for 40 percent of the MRs and for 85 percent of the normal Ss. At present, GSR audiometry has only limited value as a clinical test of hearing with the retarded. (12 refs.) - *Edited journal abstract.*

Department of Audiology
and Speech Sciences
Purdue University
Lafayette, Indiana 47906

1335 VERNON, McCAY. Meningitis and deafness: The problem, its physical, audiological, psychological, and educational manifestations in deaf children. *Laryngoscope*, 77(10):1856-1874, 1967.

Of 1,468 applicants for admission to the California School for the Deaf during the period 1953 to 1964, 114 (about 8 percent) had postmeningitic deafness. The sex distribution was 82 males to 32 females. The average age of onset of deafness was 20 months. Since the average age of onset in other studies varied from 6½ years to late adolescence or adulthood, the biggest change that has occurred in the deaf postmeningitic child is an onset of deafness before the development of speech. The earlier the onset the greater the likelihood that the child will have aphasia, MR, hemiplegia, or emotional disorder. The average IQ of the 114 children was 95, which was below the population mean ($p=.05$). The rate of MR (14 percent) was 6 times the expected rate in the general population. There was a positive correlation between low IQ and early onset of meningitis. Overall educational achievement (Stanford Achievement Test scores) of the postmeningitic group was equal to children deaf from Rh factor, prematurity, or maternal rubella but lower than the achievement of deaf children with deaf parents. Aphasia was present in 16 percent. The postmeningitic deaf showed dichotomous distribution of educational achievement and emotional adjustment. Twenty-four percent of the children had emotional disturbances characterized by several basic patterns: aggressive asocial behavior, hyperkinetic syndrome, organic psychosis, and ego disintegration due to aphasia with deafness. The level of skill in written language was significantly below that of the genetic deaf. Postmeningitic deaf children have extensive residua from the disease. (19 refs.) - *R. Froelich.*

Psychosomatic and Psychiatric
Institute
Michael Reese Hospital
2959 South Ellis
Chicago, Illinois 60616

Mental Processes and Psychodiagnostics

1336 MILLER, LEON K., HALE, GORDON A., & *STEVENSON, HAROLD W. Learning and problem solving by retarded and normal Ss. *American Journal of Mental Deficiency*, 72(5): 681-690, 1968.

Ninety-six retarded adolescents, 100 normal adolescents of approximately the same CA as the retarded Ss, and 109 normal children of approximately the same MA as the retarded Ss were presented 10 learning and problem solving tasks. The tasks were filmed and Ss responded in booklets. Differences between the 2 CA-equivalent groups were found on nearly all tasks, with the retarded Ss performing more poorly except in probability learning. Comparisons of the 2 MA-equivalent groups revealed few significant differences in paired associate and discrimination learning but markedly poorer performance by the retarded than by the normal Ss on tasks involving the concept of conservation, the concept of probability, verbal memory, and anagrams. The results indicate that the performance of retarded Ss is most severely impaired in complex tasks involving verbal processes. (12 refs.) - *Journal abstract.*

*Institute of Child Development
University of Minnesota
Minneapolis, Minnesota 55455

1337 BUTTERFIELD, EARL C. Serial learning and the stimulus trace theory of mental retardation. *American Journal of Mental Deficiency*, 72(5):778-787, 1968.

It has been predicted from Ellis' stimulus trace theory that retarded Ss should learn serial lists less quickly than non-retarded

Ss and that both retarded as compared to non-retarded Ss and fast as compared to slow learners should make relatively more errors at the middle positions of serial lists. Furthermore, these differences should be greater for lists with longer inter-item intervals. A review of the research literature showed that these predictions have not been supported. (26 refs.) - *Journal abstract.*

3933 Eaton
Kansas City, Kansas

1338 BORKOWSKI, JOHN G., & JOHNSON, LEE ODESS. Mediation and the paired-associate learning of normals and retardates. *American Journal of Mental Deficiency*, 72(4): 610-613, 1968.

Retarded, MA, and CA groups were compared in terms of their ability to utilize mediational associations in the learning of a paired associate (PA) list. The tasks consisted of 3-stage PA mediational (A-B, B-C, A-C) or control lists (A-B, D-C, A-C). Thus implicit associative chains, A-(B)-C, were available for use during A-C learning in the mediation paradigm. Results indicated that retarded and MA groups utilized mediational associations to the same degree. Only a Low MA-Low IQ deficit was found in contrasting the mediational abilities of normals and retardates. (13 refs.) - *Journal abstract.*

University of Notre Dame
Notre Dame, Indiana 46556

1339 MILGRAM, NORMAN A. The effect of verbal mediation in paired-associate learning in trainable retardates. *American Journal of Mental Deficiency*, 72(4):518-524, 1968.

Normal children (age 4) and institutionalized trainable retardates of comparable MA learned a different paired-associate list each day for 8 consecutive days with or without mediating instructions. Mediating instructions took the form of repeating once during the presentation trial a series of sentences containing the stimulus and response terms in a meaningful context. Sentences were provided by E on days 3 and 4, were formulated by Ss on days 5 and 6, and instructions were noncommital on days 7 and 8. Mediating conditions were of borderline significance for retardates. The issue of a production versus a mediational deficiency in retardates was discussed. (12 refs.) - *Journal abstract.*

Child Center
Catholic University
of America
Washington, D. C. 20017

1340 PENNEY, RONALD K., SEIM, ROBERT, & PETERS, RAY de V. The mediational deficiency of mentally retarded children: I. The establishment of retardates' mediational deficiency. *American Journal of Mental Deficiency*, 72(4):626-630, 1968.

A 3-list, paired-associate mediational task (AB, BC-DC, AC) was used to study the mediational deficiency of retarded children relative to normal children of the same mental age. Employing the standard anticipation interval for List III, the retarded children at all mental age levels were unable to mediate whereas the normal children mediated. Increasing the anticipation interval on the third list enhanced the retardates' mediation but was detrimental to the normal children's mediation. (11 refs.) - *Journal abstract.*

University of Waterloo
Waterloo, Ontario
Canada

1341 KELLAS, GEORGE, & BAUMEISTER, ALFRED A. The effects of warning signal duration on the reaction times of mental defectives. *American Journal of Mental Deficiency*, 72(5):668-673, 1968.

Two experiments were conducted in which the relationship between warning signal duration (WD) and reaction time (RT) was examined. In the first study, WD was varied, with warning intervals (WI) held constant within a series of trials (regular procedure). Neither the normals nor the MRs benefited from the duration of the WS. The shortest WIs produced the fastest RTs. In the second study, WD was

311-967 O - 68 - 7

varied while employing the irregular procedure of WI presentation (random within a series). An interaction between WI and WD resulted. The RTs of defectives were increased as a function of WD only when a 0-sec WI was employed. These results are discussed in relation to previous research findings. (7 refs.) - *Edited journal abstract.*

University of Alabama
University, Alabama 35486

1342 BAUMEISTER, ALFRED A., & KELLAS, GEORGE. Distribution of reaction times of retardates and normals. *American Journal of Mental Deficiency*, 72(5):715-718, 1968.

Six normals and 6 MRs were compared on a simple serial reaction time task. Several hundred responses were obtained for each S. The distributions of responses for the retardates tended to be more variable, platykurtic, and symmetric. All the normals showed typical leptokurtic distributions skewed to the right. It was suggested that retarded behavior is, in some contexts, characterized as much by lack of consistency as by a generally low level of responding. (4 refs.) - *Journal abstract.*

Department of Psychology
University of Alabama
University, Alabama 35486

1343 KOUW. W. A. Effects of stimulus intensity and duration upon retardates' short-term memory. *American Journal of Mental Deficiency*, 72(5):734-739, 1968.

Short-term memory adequacy (STMA) in retardates was hypothesized to be accessible to experimental manipulation of stimulus intensity and duration in the delayed response situation. Using Knox Cubes scores to classify Ss as high or low STMA, the hypothesized effects were, in part, demonstrated. While stimulus intensity affected delayed response performance as predicted, duration of the stimulus had no demonstrable effect. The results suggest that postulation of central nervous system integrity as the limiting function of the stimulus trace is a valid theoretical premise. Implications for further research and relevance of the results to special educational needs of the retarded are discussed. (8 refs.) - *Journal abstract.*

Division of Child Psychiatry
University of Texas Medical Branch
Galveston, Texas

1344 BAUMEISTER, ALFRED A., DUGAS, JEANNE, & ERDBERG, PHILIP. Effects of warning signal intensity, reaction signal intensity, preparatory interval, and temporal uncertainty on reaction times of mental defectives. *Psychological Record*, 17(4):503-507, 1967.

Experiments with 48 institutionalized MR males demonstrated that each increment in warning signal (WS) intensity produces reliably longer reaction times (RTs). The Ss' mean IQ was 55, with a standard deviation (SD) of 13; their mean CA was 22.2 with an SD of 5.4 years. The 4 variables experimentally manipulated were: preparatory interval (PI), or the time between WS onset and presentation of the reaction signal (RS); regularity of the PI; RS intensity and WS intensity. Preparatory intervals of 2, 4, 7.5, and 15 seconds were used in either a regular or an irregular procedure. RS intensity was either 15 or 65 dB above the S's threshold for a 1,000 cps tone to the right ear. WS intensities were 15, 40, and 65 dB above the 1,000 cps threshold to the left ear. WS lasted for 1.5 seconds. "The Ss in any 1 group experienced 1 level of RS intensity, all levels of WS intensity and all PIs presented under either the regular or irregular procedure." Analysis of variance was applied to the data. Findings include: (1) intensity of WS does influence RTs of mentally defective Ss, (2) warning interval and regularity of the interval interact significantly, (3) the difference between regular and irregular modes of PI administration is most pronounced at the 2-second interval, and (4) the effect of RS intensity did not reach an acceptable level of significance. (4 refs.) - *C. M. N. Mehrotra.*

University of Alabama
University, Alabama 35486

1345 GERJUOY, IRMA R., & WINTERS, JOHN J., Jr. Response preference and choice-sequence preferences: I. Regression to alteration. *Psychonomic Science*, 7(12):413-414, 1967.

To determine response and choice-sequence preferences, 5 numerical binary-choice tasks of varying difficulty were presented to 28 adolescent EMRs and 263 normal fourth through eighth-grade children. Each task had a number centered at the top followed by pairs of 2 or 3-digit numbers. Tasks 1, 2, 4, and 5 had 10 trials, while task 3 included 20 trials. The 10-trial tasks were presented consecutively, 2 to a page; the 20-trial task was presented separately after the first pair of tasks. The level of difficulty for each task was determined. Results indicated that retardates alternated more than normals in all tasks and that alternation was greatest for the most difficult task. In both populations when Ss found no solution, they tended to circle the left-hand number more frequently than the right-hand number. Percentage-wise fewer retardates found solutions for any of the tasks. Some retardates displayed invariant alternation (alternating throughout the task), a procedure that was not used by normals. Normals alternated more on the most difficult task also. It is concluded that alternation, termed "nonadaptive behavior," is lower in the developmental hierarchy and is called "regression to alternation." (5 refs.) - *B. Bradley.*

Johnstone Training and
Research Center
Bordentown, New Jersey 08505

1346 BRYANT, P. E. Practical implications of studies of transfer of learning. *Journal of Mental Subnormality*, 13(25):78-80, 1967.

Two experiments on the effects of verbal instruction on learning in MRs illustrate that while practical questions may determine the selection of research topics, traditional research methods should be used in investigation. The results of a study which employed 2 discrimination tasks to investigate the ability of MRs to abstract rules indicated that verbal instruction improved immediate learning but impeded transfer processes. Transfer in MRs seemed to depend on learning to avoid irrelevant dimensions; verbalization appeared to interfere with this type of learning. It was concluded that the transfer paradigm cannot be used to investigate abstraction ability. A second experiment employing a 2-color sorting task was designed to identify the specific effects of verbal instruction on MR learning processes, specifically, on the response about which instruction was given and on the response about which instruction was not given. Findings indicate that MRs tend to learn responses independently. Verbal instruction concerning 1 color response had little effect on the learning of the other color response. In a no-instruction situation Ss made an equal number of errors for each color. When instruction about both colors was given, errors were evenly distributed but greatly reduced in number. Instruction on 1 color resulted in reduction of errors for that color; however, errors for the uninstructed color remained at the level of those in the no-instruction situation. Although this finding must be validated in a practical learning situation, indications are that MR learning difficulties may be alleviated by introducing non-verbal teaching strategies. (6 refs.) - *J. K. Wyatt.*

Institute of Psychiatry,
Medical Research Council
The Maudsley Hospital
London, England

1347 SMITH, MAURICE P., MEANS, JOHN R., & FISHKIN, STEVEN. Effects of naming upon learning and transfer of learning in the mentally retarded. *American Journal of Mental Deficiency*, 72(5):637-647, 1968.

This study investigated the effects of various factors upon discrimination learning and transfer of learning in 50 male and 39 female MRs (CA, 12-50; IQ, 35-80). The results indicated that: (1) Most Ss improved in learning efficiency, even with brief practice; (2) increasing the physical stimulus distinctiveness of response related cues did not facilitate learning; (3) forced naming of problem related cues appeared to facilitate immediate learning; (4) a candy reward procedure used did not have any effect upon immediate learning or transfer of learning; (5) practice in naming problem related cues had transfer value when the names practiced were applicable to the transfer task. (19 refs.) - *Edited journal abstract.*

University of Colorado
Boulder, Colorado 80302

1348 WATSON, LUKE S., JR., ORSER, RICHARD, & SANDERS, CHRISTOPHER. Reinforcement preferences of severely mentally retarded children in a generalized reinforcement context. *American Journal of Mental Deficiency*, 72(5):748-756, 1968.

A generalized reinforcement technique was investigated with institutionalized SMR children. Two experiments were conducted. The first experiment was concerned with the conditioned reinforcement properties of tokens. Ss used poker chips to operate candy dispensing and amusement-type vending machines. Poker chips acquired conditioned reinforcement properties as a function of training. Primary reinforcement preferences were investigated in the second experiment. It was found that candy was preferred to "amusement." With respect to candy preferences, malted milk balls and M & M's were preferred to mints, Sweets and Tarts, and chocolate-flavored "Sixlets." (11 refs.) - *Journal abstract.*

Department of Psychology
Case-Western Reserve
University
Cleveland, Ohio

1349 NOONAN, J. ROBERT, & BARRY, JOHN R. Differential effects of incentives among the retarded. *Journal of Educational Research*, 61(3):108-111, 1967.

The differential effects of incentives among the retarded were investigated to analyze the motivational systems in relation to environment. Thirty males - 10 normals, 10 institutionalized MRs, and 10 noninstitutionalized MRs - were matched on the basis of MA achieved on the Stanford-Binet Form L-M. The mean MA of the 3 groups was 6.3 years; the CA of the groups was not closely controlled. The retarded Ss represented the familial or congenital type of retardation. The normal Ss and noninstitutionalized retardates attended elementary schools in Florida while the institutionalized retardates resided at the Sunland Training Center in Gainesville, Florida. Ss were tested on a simple performance task under social and tangible reinforcement conditions. The dependent variables were: time or length of performance and speed or rate of performance. Results indicated that the normals and the institutionalized retardates responded in a similar manner. The noninstitutionalized retardates performed significantly longer than either of the other groups and performed faster than the institutional retardate group. Results are considered to be related to the stress which the noninstitutionalized retardate experiences in his relations with the environment. The need for praise, support, and acceptance becomes at least as important to these Ss as tangible reinforcement. (15 refs.) - *B. Bradley.*

University of Georgia
Athens, Georgia 30601

1350 HAYWOOD, H. CARL. Motivational orientation of overachieving and underachieving elementary school children. *American Journal of Mental Deficiency*, 72(5): 662-667, 1968.

Overachieving and underachieving 10-year-old school children were compared with respect to intrinsic-extrinsic motivational orientation. Overachievers were found to be relatively more intrinsically motivated than underachievers in all 3 academic areas (reading, spelling, and arithmetic). The differences in motivational orientation between overachievers and underachievers were largest in the EMR range (IQ=65-80) and smallest in the superior range (IQ 120 and above). Overachievers tend to be motivated to a greater extent by factors inherent in the performance of tasks, while underachievers tend to be motivated by factors extrinsic to the task, i. e., by the ease, safety, comfort, and security aspects of the environment. (20 refs.) - *Journal abstract.*

George Peabody College
for Teachers
Nashville, Tennessee 37203

1351 BELMONT, JOHN M., & ELLIS, NORMAN R. Effects of extraneous stimulation upon discrimination learning in normals and retardates. *American Journal of Mental Deficiency*, 72(4):525-532, 1968.

A series of 6 experiments was conducted to study the effects of extraneous stimulation (ES) upon retardate learning. In experiments I-IV normal and mildly retarded adults learned a two-choice discrimination learning

problem with the addition of postresponse ES (bright lights). ES produced a decrement in normal learning but tended to facilitate retardate learning. In experiments V and VI, retardates learned a series of 6 two-choice problems, on which postresponse ES (meaningful pictures) was at first found to facilitate learning. The same ES distracted S later in the series. The dual role of ES as a facilitator and distractor was discussed in terms of S's familiarity with the total learning situation, and it was concluded that current notions regarding distractibility in retardation require serious qualification. (12 refs.) - *Journal abstract.*

Department of Psychology
Yale University
333 Cedar Street
New Haven, Connecticut

1352 SMITH, JEROME, ANDERSON, VICTOR, CUNNINGHAM, THOMAS, & SJOBERG, WAYNE. A comparison of auditory and visual discrimination learning in retardates. *American Journal of Mental Deficiency*, 72(3):445-449, 1967.

A comparison of the successive auditory and visual discrimination of 45 institutionalized MR boys and girls with the findings of 2 other studies employing both simultaneous and successive auditory and visual junk stimuli indicated the operation of acquisition functions similar to those predicted by the Zeaman and House attention theory. A Modified Wisconsin General Test Apparatus was used to present 1 group of 22 Ss (mean MA, 8.1; mean IQ, 58) with successive visual junk discrimination problems and a second group of 23 Ss (mean MA, 6.6; mean IQ, 61.3) with successive auditory junk discrimination problems. Level of difficulty for the 2 tasks differed. The median S for the successive visual group required 75 trials to reach the criterion, as compared to a requisite of 50 trials for the median S in the successive auditory group. Comparison with earlier studies revealed that although the acquisition shapes for the 4 discrimination functions were similar, the median S for the simultaneous groups reached the criterion in 25 trials. The simultaneous visual junk problem was significantly easier than the successive visual junk problem. The performance of the successive auditory group was more like that of the simultaneous visual group than that of the successive visual group. Although the visual-auditory difference in the successive mode of presentation was not significant, its presence suggests a possible interaction between presentation mode and sensory mode. (8 refs.) - *J. K. Wyatt.*

Department of Psychology
University of Connecticut
Storrs, Connecticut 06268

1353 ALLEN, R. M. Long term retention of learned visual perception skills by educable mental retardates. *Journal of Mental Deficiency Research*, 11(4):254-256, 1968.

A group of 7 children who had received Frostig visual perception training (E group) were retested 1 year after training had ended to determine the extent of their learning retention. Their performance was compared with that of 7 other children who had had no previous training (C group). The hypothesis of long term retention for the E group was supported; improvement was significant ($p < .02$). The C group did not improve despite the passage of time. (3 refs.) - *C. A. Pepper.*

University of Miami
Coral Gables, Florida

1354 HOLDEN, EDWARD A., JR. Stimulus duration and the perception of rectilinear dot progressions in educable retardates. *American Journal of Mental Deficiency*, 72(4): 599-602, 1968.

This study was undertaken to test the hypothesis (Ellis, 1963) that trace parameters are dependent upon stimulus duration. Twenty-eight educable retardates were tested on a task requiring "straight" or "crooked" judgments of rectilinear dot progressions generated by lights illuminated sequentially for 4 different durations. For 16 Ss interstimulus time remained constant regardless of stimulus duration, and for 12 Ss interstimulus time decreased concomitantly with increasing duration. Increasing duration had no effect on the number of "straight" judgments when interstimulus time was held constant, but decreasing interstimulus intervals increased the number of "straight" judgments significantly. It was concluded that trace parameters are independent of stimulus duration. (5 refs.) - *Journal abstract.*

E. R. Johnstone Training &
Research Center
Bordentown, New Jersey 08505

1355 HEAL, LAIRD W., *DICKERSON, DONALD J., & MANKINEN, RICHARD L. Solution of simultaneous, matching-to-sample, and successive discrimination problems by retardates. *American Journal of Mental Deficiency*, 72(4):577-583, 1968.

Two experiments were performed to study the solution of simultaneous (SI), matching-to-sample (M), and successive (SU) discrimination problems by MR Ss. The problems were arranged in a manner such that the particular solution used by S was ambiguous. After criterion performance was attained, test trials were administered to assess the solution adopted by S. Experimental factors, in addition to problem type, were IQ (High vs. Low) and response locus (Proximal vs. Distal). The training results showed that all problems were learned faster by High-IQ (Median IQ=43) than by Low-IQ (Median IQ=34) Ss. Performance on the SI problem was facilitated by proximal (directly to stimuli) as compared with distal (5 in. from stimuli) response locus, while performance on the M and SU problems was unaffected by response locus. Test trial results suggested that the SI problem most frequently was solved by the acquisition of an approach response to the rewarded cue, that the M problem most frequently was solved by matching, and that the SU problem most frequently was solved by cue-position patterning. (5 refs.) - *Journal abstract.*

*The University of Connecticut
Storrs, Connecticut 06268

1356 WILSON, BARBARA C., & WILSON, JAMES J. Sensory and perceptual functions in the cerebral palsied: I. Pressure thresholds and two-point discrimination. *Journal of Nervous and Mental Disease*, 145(1):53-60, 1967.

When pressure thresholds and 2-point discrimination were tested on 120 congenitally impaired cerebral palsied (CP) Ss and 60 non-neurologically impaired Ss, quantitative somatosensory defects were found in the CP group. The CP group consisted of 60 spastics (hemiplegics and quadriplegics) and 60 quadriplegic athetoids of varying degrees of severity. All Ss ranged in age from 7 to 21 years and were divided into 5 age levels. IQ was not considered in the selection of Ss. Pressure thresholds were determined with a modified Von Frey esthesiometer; 2-point limens were determined with a pair of modified vernier calipers. The index finger and palm of the preferred hand were used. Sensory deficits were found in 48 percent of the CP group. There was no significant difference between the spastic and the athetoid groups. The CP group thresholds were significantly higher than those of the control group for pressure palm and 2-point discrimination, but not for pressure-finger. The older age groups were less sensitive than the younger age groups. The influence of IQ was not significant. Correlations showed that pressure and 2-point discrimination thresholds probably measure substantially independent functions. When 1 deficit was present, the likelihood of the presence of a second deficit was increased. (11 refs.) - *R. Froelich.*

St. Agnes Hospital
North Street
White Plains, New York 10605

1357 WILSON, BARBARA C., & WILSON, JAMES J. Sensory and perceptual functions in the cerebral palsied: II. Stereognosis. *Journal of Nervous and Mental Disease*, 145(1): 61-68, 1967.

Testing of stereognostic ability in 120 congenitally impaired cerebral palsied (CP) and 60 non-neurologically impaired (NI) Ss showed that the NI had a superior mean performance on both the size and form aspects of the haptic object discrimination task. The CP group consisted of 60 spastics (hemiplegics and quadriplegics) and 60 quadriplegic athetoids of varying degrees of severity. All Ss ranged in age from 7 to 21 years and were divided into 5 age levels. IQ was not considered in the selection of the Ss. Each S was instructed to use his preferred, but not necessarily his dominant, hand to discriminate 15 wooden objects by feel only. There was no demonstrable difference between the athetoid and spastic groups. Spastics with high MA had fewer errors in form and size discrimination. Among the NI Ss an effect of age on size discrimination was noted. There seemed to be a memory factor which was hindering the CPs' ability to recall which object they were to select. It appears that language and symbol manipulation factors played a role in addition to sensory factors. The presence of one defect increased the likelihood of the presence of a second. There was a significant occurrence of pairs of defects. There may not, however, be an association between astereognosis and somesthetic defects. (18 refs.) - *R. Froelich.*

St. Agnes Hospital
North Street
White Plains, New York 10605

1358 HORNE, BETTY M., & JUSTISS, WILL A. Comparison of normals and retardates on three perceptual and motor tasks. *Perceptual and Motor Skills*, 26(2):539-544, 1968.

A group of 40 institutionalized retarded individuals with a wide range of CA (11 to 56 yrs) and IQ (36 to 81) was compared with a group of 40 normal second and third graders of approximately the same mental age on 3 tasks. Of these, the first, a finger oscillation test, is primarily motor; the second, an embedded figures test, is perceptual; the third, a design-copying test, is perceptual-motor. The retarded group showed greater variability than the normal group on finger oscillation and design copying. No significant differences between raw scores of the 2 groups were found on finger oscillation or embedded figures, but the normal Ss were superior on design copying ($p = .001$). This pattern seems related to the complexity of the task requirements. (19 refs.) - *Journal abstract.*

Sunland Training Center
Gainesville, Florida 32601

1359 ORNITZ, EDWARD M., & RITVO, EDWARD R. Perceptual inconstancy in early infantile autism. *Archives of General Psychiatry*, 18(1):76-98, 1968.

The diagnostic terminology, natural history, symptomatology, differential diagnosis, etiologic considerations, and underlying mechanisms of early infantile autism are presented with particular emphasis on the perceptual inconstancy. Diagnostic labels used to describe the autistic child include pseudoretardation, atypical development, symbiotic psychosis, childhood schizophrenia, and infantile psychosis. The purpose of the paper is to attempt to explain these disorders as variations of a single pathological entity. The term pseudoretardation has been used because, although these children often appear to have MR, they still manifest intellectual potential. The symptoms of this disorder have been classified into 5 groups: disturbances of perception, motility, relatedness, language, and developmental rate. Disturbances of perception include heightened awareness, hyperirritability, and obliviousness to external stimuli. All of these may occur in the same child and all modalities of sensation may be involved, although nonresponsiveness to speech is the most notable of the perceptual disorders. Hand-flapping is an activity that is almost pathognomic of the autistic child. Etiologic considerations include hereditary tendency, influence of parental personality or malignant family interaction, critical periods of infancy, disturbed neurophysiology, and underlying developmental and neurological pathology. One underlying mechanism that may explain early infantile autism is an inability to maintain constancy of perception. Eight case histories illustrating symptomatology and the natural history of the disorder are presented. (47 refs.) - *R. Froelich.*

760 Westwood Place
Los Angeles, California 90024

1360 WINTERS, JOHN J., JR., GERJUOY, IRMA R., CROWN, PETER, & GORRELL, REBECCA. Eye movements and verbal reports in tachistiscopic recognition by normals and retardates. *Child Development*, 38(4):1193-1199, 1967.

Adolescent educable retardates, approximately equal MA normals and equal CA normals were tachistiscopically presented pairs of both alphabetic and nonalphabetic stimuli for 1 second. Two observers recorded the direction of eye movements and order of verbal reports. The normal groups' eye movements and order of verbal reports were from left to right significantly more often than were retardates'. The correlations between eye movement and verbal report were significantly higher for normals than for retardates. Retardates who were more consistent in their organization of eye movements and verbal reports gave significantly more correct responses and scored higher on a reading test than retardates who were less consistent. It was concluded that, as the consistency between eye movements and verbal reports develops, greater accuracy of recognition occurs. (6 refs.) - *Journal abstract.*

Edward R. Johnstone Training
and Research Center
Bordentown, New Jersey 08505

1361 ELKIND, DAVID. Piaget's theory of perceptual development: Its application to reading and special education. *Journal of Special Education*, 1(4):357-361, 1967.

The concepts of Piaget's developmental theory of perception may be practically applied to designs for remedial teaching methods aimed at improving the reading skills of

problem readers. An investigation of whole-part perceptual schematization development revealed that integration of these perceptual abilities is not present until children are in second grade. Since these abilities appear to be necessary before successful reading can occur, 1 remedial approach might involve direct training in whole-part perceptual tasks. The look-say reading method seems to deter the development of this schematization. Perceptual reorganization ability which permits easy figure-ground reversal, appears to be necessary for the learning of English phonics, writing, and printing. Children do not begin to spontaneously reverse figure and ground until they reach elementary school age. These 2 measures of perceptual ability may have diagnostic use in evaluating the perceptual organization of slow-learning, brain-injured, and MR children. On a remedial level, non-verbal training in perceptual tasks may be used to help slow-reading urban children, visually retarded children, and those with severe reading handicaps to gain the perceptual experiences on a sensorimotor level necessary for internal proficiency. (14 refs.) - *J. K. Wyatt.*

University of Rochester
Rochester, New York

1362 HAWKER, JAMES R. A further investigation of prompting and confirmation in sight vocabulary learning by retardates. *American Journal of Mental Deficiency*, 72(4): 594-598, 1968.

Fifty-six retarded Ss (mean CA, 13-2; mean IQ, 50) learned an 8-item sight vocabulary list to a criterion of 1 perfect test trial, and were tested for both Recall and Recognition retention immediately and after 1 and 7 days. A 2 x 2 x 2 factorial design was employed in which the 3 variables were training procedure (Prompting or Confirmation), grouping of response alternatives (Same or Different concept), and method of presentation (Word-Pictures or Picture-Words). Training procedure and grouping of response alternatives were not significant factors in either acquisition or retention. Method of presentation had no significant effect on acquisition performance but both the Recall and Recognition retention data showed that more items were correctly recalled under method Word-Pictures than method Picture-Words. It was also found that the pattern of retention scores varied for Recall and Recognition; the Recall scores decreased significantly over the 7-day period while the Recognition scores did not. (8 refs.) - *Journal abstract.*

Lamar State College
Beaumont, Texas 77704

1363 COLEMAN, HOWARD M. Visual perception and reading dysfunction. *Journal of Learning Disabilities*, 1(2):116-123, 1968.

Eighty-seven children in grades 1-6 who were 2 or more years below grade level in reading skills and performance were analyzed according to presence or absence of visual perceptual dysfunction. Comparison of the presence of these factors with reading performance revealed that 49.5 percent of the children had visual-perceptive errors severe enough to handicap education. Other findings were: (1) significantly more males than females in the primary grades had this problem and (2) routine refractory procedures were ineffective in detecting visual-perceptual disturbances. A thorough analysis of the visual-perceptual aspects of the child would aid in understanding of his educational potential, in revealing potential problems, and in establishing a basis for compensatory educational techniques. (17 refs.) - *A. Thomey.*

428 Pawtucket Avenue
Rumford, Rhode Island

1364 CORTER, HAROLD M., & McKINNEY, JAMES D. Flexibility training with educable retarded and bright normal children. *American Journal of Mental Deficiency*, 72(4):603-609, 1968.

The hypothesis that special training emphasizing shifting behavior would increase the performance of EMR and bright normal children on flexibility test variables and the Binet Intelligence Scale was tested. Two experimental groups (retarded and normal) received 20 days of flexibility training in 30-45 minute daily sessions. Retarded and normal control groups received no training. Groups were matched on MA and sex. Hypotheses regarding the facilitative effects of training were supported. Although the initial flexibility score of normals was significantly higher than that for retardates, the mean

differences in change scores between the two groups following training were not significant. (23 refs.) - *Journal abstract.*

North Carolina State University
Raleigh, North Carolina 27607

1365 BIJOU, SIDNEY W., & WILLIS, RICHARD D. A research project at the Lincoln State School. *Mental Retardation in Illinois*, 1(3):38-39, 1967.

Failure to discriminate mirror images (nonsense forms) was used in a project concerned with identification of children with a particular perceptual deficiency and experimental analysis of techniques to remove that deficiency. The task was to select from several stimuli the one form which matched the sample stimulus. Immediate reinforcement was utilized. Ss continued to respond until the proper match was made. In order to establish a stable level of performance, a "baseline" series of slides consisting of relatively simple stimuli was used. In the second stage a few mirror-image problems were included to determine motivation for correct response. These Ss were then trained in mirror discrimination. If the training were effective, Ss would be able to solve post-test problems successfully. They were then tested using rotated mirror images. If necessary, a training series and post test were again used, followed by a generalization test. In general, the training series was successful; however, some Ss did not learn discrimination to the desired degree. Attempts are underway to determine what aspects of training were inadequate and to find ways to improve that training. (4 refs.) - *E. R. Bozymski.*

University of Illinois
Urbana, Illinois 61801

1366 McNUTT, THOMAS H., & MELVIN, KENNETH B. Time estimation in normal and retarded subjects. *American Journal of Mental Deficiency*, 72(4):584-589, 1968.

Twenty retarded and 20 normal Ss reproduced tones of 1, 5, 13, or 29-second duration. Subgroups of 5 Ss each had a 1, 5, 13, or 29-second delay between the cessation of the tone and the opportunity for response. Consistent with the stimulus trace theory of Ellis, retardates showed progressively more underestimation than normal Ss at the 2 longest durations. However, retarded Ss overestimated the 1-second tone, especially with long delays. Except for this effect, response delay did not seem to influence the time estimation of either group - a finding consistent with prior research but not with stimulus trace theory. (14 refs.) - *Journal abstract.*

University of Alabama
University, Alabama 35486

1367 GOZALI, JOAV, & *BIALER, IRV. Children's locus of control scale: Independence from response set bias among retardates. *American Journal of Mental Deficiency*, 72(4):622-625, 1968.

Among retarded Ss, this study investigated the relationship between scores on the Children's Locus of Control Scale and possible tendencies to agree indiscriminately or to appear socially desirable. Data from 4 groups of young adult retardates yielded significant correlations between original and reverse forms of the LC scale (item-reversal technique) along with nonsignificant correlations between those instruments and independent measures of response-set bias. The results appear to negate possible interpretations of the influence of such bias on control-scale data obtained from comparable populations. Further, the procedure apparently yielded a reliable alternate form of the Children's LC Scale. (11 refs.) - *Journal abstract.*

*151 East 67th Street
New York, New York 10021

1368 RICE, HAROLD K., McDANIEL MARTHA W., STALLINGS, VIRGINIA D., & GATZ, MARGARET J. Operant behavior in vegetative patients II. *Psychological Record*, 17(4): 449-460, 1967.

Traditional operant techniques can be used to modify behavior in profoundly retarded (vegetative) patients. The main problem in using these techniques is determining an adequate reinforcing stimulus for each individual patient; this problem can only be solved empirically. The Ss were 2 6-year-old MR boys who, although they represented

entirely different etiologies, both functioned behaviorally at a level normal for a child of about 6 months of age. The first S was profoundly retarded as the result of a genetically determined metabolic defect and had no apparent neuromuscular deficit. For this S pulling a suspended ring was selected as a desired response and moving pictures served as reinforcing stimulus. The Es could not explain what in the movie acted as a reinforcer. Although 35 mm slides used in place of a movie initially produced a high rate of response, they did not maintain the behavior over a period of time. The second S was profoundly retarded with severe spastic cerebral palsy due to perinatal anoxia. In this case touching a ring was used as a response with ice cream and verbal stimulus of the E as reinforcement. (4 refs.) - *C. M. N. Mehrotra.*

Medical College of Georgia
Augusta, Georgia 30902

1369 HINGTGEN, JOSEPH N., & COULTER, SUSAN K. Auditory control of operant behavior in mute autistic children. *Perceptual and Motor Skills*, 25(2):561-565, 1967.

To determine whether auditory stimuli can control operant responding in mute autistic children, 4 Ss were presented with 5 pairs of auditory stimuli. During the presentation of 1 stimulus the child was able to obtain food on a previously established fixed-ratio schedule of lever pressing, while during the presentation of the second stimulus an extinction schedule was in effect. A new set of stimuli was introduced when the preceding set was learned. Three of the 4 children learned to discriminate 4 pairs of auditory stimuli within an average of 36 daily 40-minute sessions. The data indicate that some mute autistic children are capable of learning simple auditory-motor associations. (7 refs.) - *Journal abstract.*

No address

1370 ROSS, LEONARD E. Two applications of behavioral research to mental retardation. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 14, p. 220-235.

The successful use of a reversal-nonreversal shift discrimination learning problem and of a classical eyelid conditioning paradigm with MR children illustrates that basic general psychology research methods can be used in behavioral research with MRs. Reversal, nonreversal-old, and nonreversal-new situations were used in the reversal-nonreversal shift discrimination situation. Normal children (mean MA, 124.4 mo; mean IQ,110.4) learned the reversal problem with less difficulty and with significantly fewer errors than they did the nonreversal problem. MR children (mean MA, 115.5 mo; mean IQ, 70.7) showed no significant differences in performance. An analysis of variance revealed a significant interaction of IQ by reversal-nonreversal old. These findings indicate the presence of a possible deficit in the mediation processes used by the MRs. The successful eyelid-conditioning pilot study used a motion-picture distraction procedure and either 100 percent or 50 percent acquisition reinforcement with 21 SMR children. Small differences between the 2 reinforcement groups were found during acquisition; the 50 percent group did not prove to be more resistant to extinction; the amount of inhibition that developed during the unreinforced trials seemed to be less than that usually found with college students. Because of the minimal amount of verbal behavior involved in eyelid conditioning, it may prove to be a useful way to assess basic learning, motivation, and development in populations having a wide range of age and intelligence. (9 refs.) - *J. K. Wyatt.*

1371 BRICKER, WILLIAM A. Behavior shaping strategies as applied to therapeutic goals for retardates. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 13 p. Mimeographed.

If the amount of deviant behavior displayed by MRs reflects the scope of the discrepancy existing between behavioral repertoire and the demands of the environment, then behavior-shaping procedures designed to enlarge behavioral repertoires should reduce deviant behavior. Present behavior-shaping emphasis is on the building of adaptive responses rather than on the elimination of deviant ones. This strategy has been used to induce acceptable toileting behavior and to reduce self-destructive behavior, aggression, withdrawal, and hyperactivity. One useful technique employs the differential reinforcement of "other" responses which are predicted to increase long-range competence. (16 refs.) - *J. K. Wyatt.*

Department of Psychology
George Peabody College
Nashville, Tennessee 37203

1372 BURCHARD, JOHN D. Systematic socialization: A programmed environment for the habilitation of antisocial retardates. *Psychological Record*, 17(4):461-476, 1967.

Although reinforcement and punishment can be used to increase, decrease or maintain the occurrence of certain behaviors, the probability of such a consequence outside the training situation is extremely remote for most behaviors. Two experiments were conducted with 12 MR adolescent boys (IQ, 50-70; CA, 10-20) who had frequently displayed antisocial behavior during the year prior to transfer to the Intensive Training Program. The first experiment analyzed the effect of the reinforcing stimulus (a token) on the frequency of 2 specific responses: sitting at a desk during workshop and during school. An A-B-A type of analysis was utilized with reinforcement contingent upon response (R) during phase 1, non-contingent during phase 2, and then contingent again during phase 3. In phase 2, school and workshop performance immediately declined to almost zero level. The second experiment analyzed the effects of a punishing stimulus (response cost) on the behaviors being punished. As in the first experiment, A-B-A type analysis was used. The Rs consisted of various antisocial behaviors. The staff used "time out" whenever a particular R could not be ignored and "seclusion" whenever "time out" was inappropriate. Time out and seclusion responses could not be brought under complete experimental control by the manipulation of the response cost contingency. (29 refs.) - *C. M. N. Mehrotra.*

University of North Carolina
Chapel Hill, North Carolina 27514

1373 KARL, NORMAN J., & SCHELL, ROBERT E. Restricted perceptual experience effects on the later avoidance behavior of two subspecies of deermice, peromyscus leucopus and peromyscus polionotus. *Perceptual and Motor Skills*, 26(1):295-302, 1968.

Groups of *Peromyscus leucopus* and *Peromyscus polionotus* were placed under conditions of restricted perceptual experience at two different ages and for two periods of time. In testing for effects on later avoidance behavior, measures were taken of the time required before S drank water while in a novel setting, reactivity to shock, and speed of avoidance conditioning and extinction. Duration and age of restricted perceptual experience had no systematic effect on avoidance behavior across or within subspecies; effects varied with subspecies and the measure under consideration. Decrements in avoidance behavior were more marked and longer lasting for *Peromyscus polionotus* and, depending upon the measure, were primarily a function of either duration or age of restricted perceptual experience. (12 refs.) - *Journal abstract.*

Michigan State University
Lansing, Michigan

1374 BIRCH, HERBERT G., BELMONT, LILLIAN, BELMONT, IRA, & TAFT, LAWRENCE. Brain damage and intelligence in educable mentally subnormal children. *Journal of Nervous and Mental Disease*, 144(4):247-257, 1967.

Intelligence test patterning in EMR children with and without evidence of central nervous system (CNS) damage is investigated to assess the validity of using specific types of intellectual patterning to infer CNS damage. The Ss represented all known cases of educable subnormality in the 8 to 10-year-old age range in Aberdeen, Scotland. The 71 children studied were an epidemiologically derived group who were independently evaluated for neurological signs by clinical neurological examination and analyzed for antecedent conditions of CNS risk by detailed and systematic review of obstetrical and medical records. The WISC, with British modifications, was administered by trained examiners. Results indicate that patterns of intellectual functioning are not systematically associated with the neurological evidence of BD or with antecedent conditions of risk of BD. Gross classifications based on the amount of scatter on the WISC has not proven valid. Data are discussed on the basis of the possibility that the WISC may be insensitive to etiology and the consideration that all EMR children may have brain defects. (21 refs.) - *B. Bradley.*

Albert Einstein College of
Medicine
New York, New York 10461

1375 ROSECRANS, C. J. The relationship of normal/21-trisomy mosaicism and intellectual development. *American Journal of Mental Deficiency*, 72(4):562-566, 1968.

Thirty-one cases of mosaic Down's syndrome (normal/21-trisomy mosaicism) were discovered in the literature. Twenty of the 31 cases

report acceptable intellectual measures accompanying the aberrant cell percentages. Three groups were established for correlations of percentage of aberrant cells with measured intelligence. The groups were: (1) blood cells and intellectual measure, (2) skin cells and intellectual measure, and (3) highest percentage of aberrant cell tissue regardless of source and intellectual measure. Two of the 3 correlations are highly significant and the third is in the same direction though not statistically significant. The mean IQ of the mosaic population is also much higher than that generally reported for Down's syndrome (mongolism). (22 refs.) - *Journal abstract.*

University of Alabama
Medical Center
Birmingham, Alabama 35233

1376 FEINBERG, IRWIN. Eye movement activity during sleep and intellectual function in mental retardation. *Science*, 159(3820):1256, 1968.

A positive relation was found between the amount of eye movement during rapid-eye-movement or paradoxical sleep and estimates of intellectual level in a group of retarded adults. This result supports the hypothesis that during sleep the brain carries out processes important for cognitive function. (15 refs.) - *Journal abstract.*

State University of New York
Downstate Medical Center
New York, New York 11200

1377 CATTELL, RAYMOND B. The theory of fluid and crystallized general intelligence checked at the 5-6 year-old level. *British Journal of Educational Psychology*, 37(2):209-224, 1967.

A fourth-order factor analysis of the cognitive ability and personality variables of 57 boys and 57 girls (mean CA, 79.24 mos) revealed that crystallized general ability at this age is a product of the historical interaction of fluid ability with personality factors such as persistence and application. Cognitive variables chosen to separate fluid and crystallized ability were assessed by means of the IPAT Culture Fair Intelligence Scale I and the Verbal and Numerical tests of the California Test of Mental Maturity. Short questionnaire scales were used to assess 13 items chosen from those personality variables found to be most loaded on the Cattell-Peterson nursery school factors. Factor analysis revealed 18 first-order factors of a primary ability nature, 18 second-order factors, 4 third-order factors, and 3 fourth-order factors. Previous studies have shown a union of 2 general ability factors forming a fluid ability factor at the third order. Its appearance at the fourth order in this study is unexplainable at the present time but may be due to statistical error or to a need for theoretical modification. The verification of the existence of 2 general ability factors has implications for the identification of the operation of their differential functions in relation to brain injury and intelligence assessment. (19 refs.) - *J. Wyatt.*

University of Illinois
Urbana, Illinois 61801

1378 RASOF, BEATRICE, LINDE, LEONARD M., & DUNN, OLIVE JEAN. Intellectual development in children with congenital heart disease. *Child Development*, 38(4):1043-1053, 1967.

The effect of cyanotic congenital heart disease on intellectual development was evaluated in a 5-year study of 98 children with cyanotic and 100 with acyanotic congenital heart disease. Eighty-one normal siblings of patients and 40 well babies were also tested. Gesell, Cattell, and Stanford-Binet Scales were administered at specified time intervals, and clinical, physiological, demographic, and behavioral variables were recorded. Cyanotic children scored significantly below acyanotic and well children. When IQ was adjusted for physical incapacity, however, the difference between cardiac groups was reduced. A major finding was that incapacity is significantly related to intellectual functioning in the early years but the correlation between Stanford-Binet IQ and incapacity beyond 3 years is slight. Explanations were sought in (1) the nature of intellectual functions tapped by tests at different age levels and in (2) the role of incapacity in affecting the nature of the cardiac child's experience and functioning in early years. (15 refs.) - *Journal abstract.*

University of California
Center for the Health
Sciences
Department of Pediatrics
Los Angeles, California 90024

1379 BUTTERFIELD, GAIL B., & *BUTTERFIELD, EARL C. The effects of training-testing interval and intellectual level upon transposition. *American Journal of Mental Deficiency*, 72(5):710-714, 1968.

The 2-choice transposition behavior of High MA-IQ and Low MA-IQ retardates was examined under conditions in which the testing followed training immediately, after 10 minutes or after 24 hours. Contrary to the discriminability hypothesis of Stevenson and Bitterman, increasing the training-testing interval did not increase the frequency of transposition of either the High or Low groups. These findings, taken in conjunction with those of previous investigations, suggest that the discriminability hypothesis applies only to young children of normal intellect. Differences between the High and Low groups suggested the need to study transposition with a design in which MA and IQ are varied othogonally. (11 refs.) - *Journal abstract.*

*3933 Eaton Street
Kansas City, Kansas 66103

1380 RANKIN, RICHARD J. Impact of anxiety produced by delayed auditory feedback on verbal intelligence. *Perceptual and Motor Skills*, 26(1):139-142, 1968.

The Wide Range Intelligence Test was administered to 24 undergraduate students under conditions of normal feedback and delayed auditory feedback (DAF). Subjects perform at a lower level under DAF. DAF is proposed as a temporary intelligence suppressor useful in exploring intelligence and retardation theories. (19 refs.) - *Journal abstract.*

University of Oregon
Eugene, Oregon 97401

1381 DAVENPORT, RICHARD K., & ROGERS, CHARLES M. Intellectual performance of differentially reared chimpanzees: I. Delayed response. *American Journal of Mental Deficiency*, 72(5):674-680, 1968.

Seven chimpanzees separated from their mothers at birth and raised for 2 years in a restricted environment were compared on spatial delayed response tasks to 8 wild-born enriched environment chimpanzees when both groups were between 7 and 9 years of age. Restricted Ss were initially inferior but with experience closely approached the wild-born performance level. Differences in performance between the groups and delays and improvement with experience are explained in terms of relative differences and changes in task-oriented and non-task-oriented behaviors. Findings are related to learning problems and IQ test performance of human children reared in unstimulating environments. (8 refs.) - *Journal abstract.*

Yerkes Regional Primate
Research Center
Emory University
Atlanta, Georgia 30322

1382 HIMELSTEIN, PHILIP. Use of the Stanford-Binet, Form LM, with retardates: A review of recent research. *American Journal of Mental Deficiency*, 72(5):691-699, 1968.

A review and an analysis of recent studies with the Revised Stanford-Binet, Form LM, employing retardates is presented. Major areas include validity, reliability, factors affecting performance, and short forms. The instrument shows substantial relationships with other tests of intelligence and, for the retardate, is a good predictor of social maturity, learning, and other facets of intelligence. (43 refs.) - *Journal abstract.*

University of Texas
El Paso, Texas 79999

1383 ERICKSON, MARILYN T. The predictive validity of the Cattell Infant Intelligence Scale for young mentally retarded children. *American Journal of Mental Deficiency*, 72(5):728-733, 1968.

Consistency of IQ scores was examined for a group of children initially referred to a developmental evaluation clinic when they were under 3 years of age. For the initial examinations the Cattell Infant Intelligence Scale was used; for the annual retests either the Cattell or the Stanford-Binet Form L-M (after a basal mental age of 2 years was achieved) Intelligence Scales were used. The results showed a high degree of IQ score consistency over a 2-year period following the initial examination. Factors relating to untestability and variability in test performance are discussed. (12 refs.) - *Journal abstract.*

Department of Pediatrics
University of North
Carolina
Chapel Hill, North Carolina

1384 SILVERSTEIN, A. B., & HILL, THOMAS VERNON. Comparability of three picture vocabulary tests with retarded school children. *Training School Bulletin*, 64(2): 58-61, 1967.

Three picture vocabulary tests (the Full-Range, the Peabody, and the Van Alstyne) administered to 100 institutionalized MRs revealed an overall high magnitude of intercorrelation; this supports the contention that there is little basis for selecting 1 test over another when evaluating MRs. The Ss consisted of 71 boys and 29 girls with a mean CA of 13.9 years and a mean IQ (Binet or WISC) of 47.2. Diagnoses included mongolism (21), manifestations of encephalopathy (24), and MR due to uncertain cause (24). The picture vocabulary tests were given to each child in random order at a single session. Raw score intercorrelations ranged from .86 to .91. Internal consistency reliabilities ranged from .91 for the Van Alstyne to .97 for the Peabody. The intercorrelations corrected for attenuation ranged from .91 to .97. When the effects of CA were controlled, the correlations and reliabilities were reduced only slightly, even though CA correlated significantly (.49) with each test. The mean IQ on the Peabody was higher than that on the Full-Range ($P < .04$) or the Van Alstyne ($P < .001$). The Peabody took less time to administer than either of the other tests. Binet or WISC IQs correlated higher (.61) with the Peabody and Van Alstyne than with the Full-Range (.48). There were significant but low correlations (range .26 to .61) between these 3 tests and teacher ratings of the children on arithmetic and reading comprehension. (5 refs.) - *R. Froelich.*

Pacific State Hospital
Pomona, California 91766

1385 PASEWARK, R. A., SAWYER, R. N., SMITH, E., WASSERBERGER, M., DELL, D., BRITO, H., & LEE, R. Concurrent validity of the French Pictorial Test of Intelligence. *Journal of Educational Research*, 61(4):179-183, 1967.

The French Pictorial Test of Intelligence (PTI), a non-verbal test, was correlated with various other measures of intelligence to determine concurrent validity. The PTI, WISC, and Lorge-Thorndike were given to 53 kindergarten and 41 second-grade children. The second-grade group also took the Stroud Hieronymus Reading Test. The PTI correlated with WISC Full Scale IQ .75 for the kindergarten Ss and .71 for the second-grade Ss. Correlations between scores on the other tests were low to moderate (.35 to .51). Teachers' estimates of intelligence and report card grades also had low correlations with PTI scores. The PTI has adequate concurrent validity with the WISC but is a poor predictor of reading skill or of academic grades. (5 refs.) - *A. Thomey.*

Univeristy of Wyoming
Laramie, Wyoming 82070

1386 BEHRLE, FREDERICK J. Examiner bias on the Vineland. *Training School Bulletin*, 64(4):108-115, 1968.

Clinical records of 248 candidates for an educable retarded program were analyzed to ascertain if various examiners (E) and examiner methods of commenting on the Vineland would reveal changes in the social quotient (SQ)-IQ difference as a measure of E bias. Marked E variation in the SQ-IQ difference obtained when controlling for intelligence was found. SQ-IQ difference was sharply increased when Es limited their answers to 4 or fewer behavioral comments on the Vineland Social Maturity Scale. Similar to other investigations using Ss of subnormal intelligence, the SQ was commonly higher than the IQ. (16 refs.) - *Journal abstract.*

Livingston Public Schools
Livingston, New Jersey 07039

1387 FINE, MARVIN J., & TRACY, D. B. Performance of normal and EMR boys on the FRPV and GHDT. *American Journal of Mental Deficiency*, 72(5):648-652, 1968.

This study examined the assumption of comparability of scores for normal and EMR boys (CA 6 to 9 yrs) on the Full Range Picture Vocabulary Test (FRPV) and Goodenough-Harris Drawing Test (GHDT). The EMR boys scored significantly higher on the FRPV while no significant differences were found for the normal boys between the 2 tests. Also, the GHDT correlated more highly than the FRPV with the category of educable mental retardation. The findings hold implications for clinicians basing decisions on test results. The clinician is encouraged to consider the questions he is asking about a subject and then which test best answers these questions. (13 refs.) - *Journal abstract.*

School of Education
University of Kansas
Lawrence, Kansas

1388 ALLEN, ROBERT M. Factor analysis of the developmental test of visual perception performance of educable mental retardates. *Perceptual and Motor Skills*, 26 (1):257-258, 1968.

Thirty-six EMRs were administered the Developmental Test of Visual Perception. A factor analysis of the 5 subtest and total test scores yielded a single factor. This differed from the two factors extracted in a study of normal children. The single factor loading implies that EMRs have uniformly inefficient subprocesses in visual perception. (5 refs.) - *Edited journal abstract.*

University of Miami
Coral Gables, Florida

1389 COOPER, JOHN R., DWARSHUIS, LOUIS, & BLECHMAN, GERALD. Technique for measuring reproductions of visual stimuli: III. Bender-Gestalt and severity of neurological deficit. *Perceptual and Motor Skills*, 25(2): 506-508, 1967.

The Cooper-Barnes technique for scoring 2-dimensional reproductions of visual stimuli was applied to the scoring of Bender-Gestalt drawings of 40 neurologically damaged Ss. The Bender scores obtained were significantly correlated with reliable ratings of severity of psycho-neurological damage. Neither the severity nor the Bender scores were significantly correlated with age. Although the severity score was not significantly correlated with IQ, the correlation between the Bender score and IQ was significant in a negative direction. This significant correlation is thought to reflect the observation that deficiency in IQ is related to the extent of organic damage which in turn is related to the magnitude of the errors found in Bender drawings. (1 ref.) - *Journal abstract.*

Children's Memorial Hospital
Chicago, Illinois

1390 ALLEN, ROBERT M. Visual perceptual maturation and the Bender Gestalt test quality. *Training School Bulletin*, 64(4): 131-133, 1968.

The Developmental Test of Visual Perception and the Bender Gestalt Test were administered to 36 educable MRs. The Ss were assigned to the High or Low Perceiver group on the basis of the score achieved on the visual perception test. The quality of the reproduced figures was definitely a function of the level of visual perceptual maturation attained by the Ss. (10 refs.) - *Journal abstract.*

University of Miami
Coral Gables, Florida

1391 BEERY, KEITH E. Geometric form reproduction: Relationship to chronological and mental age. *Perceptual and Motor Skills*, 26(1), 247-250, 1968.

One hundred ninety-five children from grades 1, 4, and 6 of middle-class suburban schools were given SRA Primary Mental Abilities (PMA) tests, a developmental sequence of geometric forms to be copied, and a pencil-and-paper test of eye-hand dexterity. Correlations among form-reproduction scores and those of the PMA subtests and totals, eye-hand dexterity and chronological age suggested that form reproduction was related primarily to MA rather than CA within the age groups. MA and CA appear to be highly related to form reproduction among the younger children. (7 refs.) - *Journal abstract.*

University of California-
San Francisco Medical Center
San Francisco, California

1392 KOPPITZ, ELIZABETH M. *Psychological Evaluation of Children's Human Figure Drawings*. New York, New York, Grune and Stratton, 1968, 341 p. $9.75.

Systematic investigation of the human figure drawings (HFDs) of 5-12-year-old children demonstrates the usefulness of this technique both as a developmental test of mental maturity and as a projective test of interpersonal attitudes and concerns. HFDs are evaluated in terms of the presence of developmental items and emotional indicators. The scoring systems and analysis guidelines presented are based on Sullivan's Interpersonal Relationship Theory rather than on the 'body image' hypothesis traditionally used to evaluate HFDs. Scores on HFDs may be used to attain a rough estimate of a child's general level of mental ability, since significant correlations have been found between HFD scores and those of the WISC and Stanford-Binet. Because the HFD profiles of brain-injured and non-brain-injured boys of normal intelligence differ significantly in the presence or absence of specific developmental items and emotional indicators, HFDs may also

be used as part of a test battery to identify the possible presence of brain injury. The HFD test may be combined with other tests to assess therapy progress, increase the predictive validity of other tests, and screen school beginners. Clinicians and school psychologists should find this book useful as a guide to the limitations and values inherent in the HFD test. (74 refs.) - *J. K. Wyatt.*

CONTENTS: Introduction; The HFD Test; Developmental Items on HFDs; Emotional Indicators on HFDs; Clinical Interpretation of Children's Drawings; Children's Attitudes Toward Their Family Reflected on Drawings; Psychotherapy and Children's Drawings; Brain Injury and HFDs; Using HFDs in Combination With Other Psychological Tests; Practical Application of Findings on HFDs: Case Histories.

1393 SAPIR, SELMA G., & WILSON, BERNICE. A developmental scale to assist in the prevention of learning disability. *Educational and Psychological Measurement*, 27(4): 1061-1068, 1967.

A developmental scale reflecting difference in perceptual-motor functioning, bodily schema, and language development was used to discriminate between a normal and a deficient population of kindergarten children. The Sapir Developmental Scale (SDS) was designed to detect developmental differences in kindergarten children and to predict academic achievement in first graders. Fifty-four kindergarten children from a high socio-economic public school were used in the study. The SDS was administered in January of the kindergarten year. Reading achievement tests and a neurological examination were administered during the following year. Developmental differences found at the kindergarten level persisted in the first grade and correlated significantly with academic performance 17 months later. (11 refs.) - *A. Thomey.*

Scarsdale Public Schools
Scarsdale, New York 10583

1394 ISMAIL, A. H., & GRUBER, J. J. *Integrated Development: Motor Aptitude and Intellectual Performance.* Columbus, Ohio, Charles E. Merrill Books, 1967, 199 p. $4.95.

Motor aptitude and intellectual performance are analyzed for the purpose of developing a motor aptitude battery which will predict the intellectual achievement of pre-adolescent children. Validation of the battery was determined by investigating the relative effectiveness of an organized physical education program on intellectual performance. In the predicting of intellectual achievement, coordination and balance items had high degrees of discrimination power for medium achievers and little discrimination for low achievers. If coordination and balance items were more complex when applied to high achievers and relatively easy when applied to low achievers, coordination items would discriminate highly among either high or low achievers. Otis IQ test scores and Stanford Achievement test scores were the criteria employed for predicting intellectual achievement by motor aptitude test items. In low achievers, coordination and balance items are of equal importance in predicting Otis IQ scores and total Stanford Achievement and subtest scores. The best predictors are coordination, balance, and growth items (in that order). Speed, power, and strength items have low predictive value in estimating intellectual ahcievement. Low achievers were structurally larger than either medium or high achievers. Results indicated that an organized physical education program has no effect on IQ scores but has a favorable effect on academic achievement scores. (67-item bibliog.) - *B. Bradley.*

CONTENTS: Introduction; Review of Selected Literature on Integrated Development; Motor Aptitude Items for the Prediction of Academic Success; Procedures for Collecting Data; Analysis of Data - Matrices of Intercorrelations for Motor Aptitude and Intellectual Performance Items; Identification of Factors Involved; Development of Motor Aptitude Test Batteries for Predicting Intellectual Achievement; The Relative Contribution of Balance and Coordination Items in the Prediction of Intellectual Achievement; Sex Differences as well as Differences Associated with High, Medium and Low Achievers; The Effect of an Organized Physical Education Program on Intellectual Performance - Experimental Data.

1395 WEAVER, LELON A., JR., & BROOKS, GEORGE W. The prediction of release from a mental hospital from psychomotor test performance. *Journal of General Psychology*, 76(2):207-229, 1967.

The relationship between performance on psychomotor tests and eligibility for hospital release within a year subsequent was evaluated. Those resident mental patients (N=

996) of various diagnoses who met the criteria for rehabilitation training were given a reaction-time measure, a rapid repetitive movement (tapping) measure, a task involving transporting and assembling skills, and a serial reaction-time test. The principal differences were between the group which included Ss with chronic brain syndrome and MR and the group which included Ss with psychosis and personality disorders. "Functionals" differed from "organics" on 27 of 30 occasions. The multiple regression and multiple correlation method yielded about 75 percent correct predictions. Relationships between diagnosis and test performance could not be determined because of skewed distributions. Clinical applications include the rank ordering of probable success in rehabilitation training and the use of normative data in evaluating test scores to determine the percentage of patients with similar scores who left or remained in the hospital. (6 refs.) - *R. D. Perkins.*

University of Vermont
College of Medicine
Burlington, Vermont

1396 TARNOPOL, LESTER. Testing the educationally handicapped child. *Academic Therapy Quarterly*, 3(2):81-89, 95, 1968.

Since there are several methods of diagnosing and assessing educationally handicapped children, the psychologist and the teacher must be acquainted with many test batteries. Some batteries identify problems but do not give a differential diagnosis of specific disabilities; others provide an assessment diagnosis. The first type includes the Bender Visual-Motor Gestalt Test. The second type includes the Illinois Test of Psycholinguistic Abilities, the Frostig Visual-Motor Perception Test, and a battery of 10 tests developed for the kindergarten population. As part of a research program, experimental editions of tests may reveal information about Ss as well as about the validity of the instruments. As yet there are no intelligence tests for Ss under 2 years of age. Because no test is a perfect predictor, it is best to interpret scores as indicators of the minimal level of the S's ability. Subjective observations and data regarding any medication being given should be recorded. The tests selected should not only provide diagnostic information on deficits which can be improved by remediation, but they also must have standardized procedures of administration, objective standardized scoring, acceptable reliability and validity, standardization groups, tables of standard scores and raw scores, and information on how to interpret the scores. Since early identification of learning disabilities aids greatly in the S's remediation, the need to continue research for better testing and tests is important. (9 refs.) - *G. Trakas.*

Departments of Psychology
and Engineering
City College of San Francisco
San Francisco, California

1397 KIRK, SAMUEL A. Amelioration of mental disabilities through psychodiagnostic and remedial procedures. In: Jervis, George A., ed. *Mental Retardation: A Symposium from The Joseph P. Kennedy, Jr. Foundation.* Springfield, Illinois, Charles C. Thomas, 1967, Chapter 13, p. 186-219.

The Illinois Test of Psycholinguistic Abilities is designed to assess major areas of communication ability and deficit and to identify special learning disabilities which require remediation. Mental functions are tested in 6 areas: visual and auditory sense modalities, decoding processes of vision and audition at the representational level, auditory-vocal and visual-motor representational association processes, vocal and motor encoding representational processes; perceptual or automatic sequential level auditory-vocal function, and automatic sequential level auditory-vocal and visual-motor sequential functions. Case study comparisons of test scores indicate that special learning disabilities do not improve with increase in age unless remediation procedures are instituted. Favorable results of pilot studies designed to assess the effects of special group instruction aimed at learning disabilities with MR children suggest that some children diagnosed as MR may be more accurately classified as children with specific learning disabilities. Disability remediation is based on the rationale that disability etiology involves a combination of biological and behavioral handicaps. (7 refs.) - *J. K. Wyatt.*

311-967 O - 68 - 8

TRAINING AND HABILITATION

Education

1398 SCHEERENBERGER, RICHARD C. Nursery school experiences for the trainable mentally retarded. In: Illinois. Mental Health Department. *Community Day Centers for the Mentally Retarded in Illinois*. (Proceedings of the third annual meeting of executive directors.) Springfield, Illinois, 1966, p. 1-18.

Research supports the contention that nursery school programs are valuable in the MR's education and development. Objectives of education for TMRs in nursery programs include mental and physical health, basic communication and numerical skills, self-care habits, social and vocational preparation, and citizenship. The schedule and curriculum should be structured flexibly. Theory suggests that the variety of experiences provided should be extensive and should emphasize social training, oral language development, self-care and health skills, psychomotor coordination, creative expression, and play activities. The educator should motivate, establish security, and provide stimulating and meaningful experiences in which the child learns through self-activity. Teaching principles inferred from Piaget's theory concerning the limits of the "pre-operational" child are: (1) be specific, direct, and concrete; (2) introduce only 1 activity at a time; (3) minimize verbal instructions; (4) focus attention on the important stimulus; (5) program instruction into sequential substeps; and (6) minimize the need for transfer of training. Operant conditioning is useful, particularly in social and self-care learning. (21 refs.) - *R. D. Perkins.*

1399 SEGAL, STANLEY S. A day school for physically handicapped children. *Medical and Biological Illustration*, 17(4):250-255, 1967.

Although the Franklin Delano Roosevelt School, London, England, was intended originally for polio victims, it is now a special school for 140 physically handicapped children: less than 10 percent have had poliomyelitis; over 1/3 have cerebral palsy; 1/4 have either spina bifida, hydrocephalus, epiepsy or congenital cardiac malformations; most have either intellectual retardation or are academically retarded; and 1/3 have visual perceptual problems. Special features of the school include buses to transport the 140 children and attendants to assist the pupils with their special needs. The staff provides medical care, dispensing of medication, physiotherapy, hydrotherapy, speech therapy, auditory training, parent counseling, and psychological testing. The educational program emphasizes adapting to the child's individual problems and uses audio-visual aid to assist teaching. Special techniques are being tried on a small group of brain-damaged children, and 2 of 8 classrooms are set aside for children with multiple handicaps. The program includes social training, musical instrument training, playing, wood and metal crafts, and typewriting. Although there is much interest and work being directed in this area of special education, more study, money, and imagination are needed to meet the problems. (No refs.) - *R. Froelich.*

Franklin Delano Roosevelt
School
Avenue Road
London, N. W. 3, England

1400 CARROLL, ANNE WELCH. The effects of segregated and partially integrated school programs on self concept and academic achievement of educable mental retardates. *Exceptional Children*, 34(2):93-99, 1967.

Data obtained in a study of 39 children (IQ, 60-80) of elementary school age indicate that the type of school program provided for EMR children does affect self-concept and academic achievement. The children had had no previous experience in any special education program. They were assigned either to a partially integrated group (PG) or to a segregated group (SG). The PG had 12 males and 7 females (mean CA, 8.16 yrs), while the SG had 13 males and 7 females (mean CA, 8.77 yrs). Each group was given the Illinois Index of Self Derogation and the Wide Range Achievement Test at the end of the first month and again after 8 months of schooling. In order to determine the direction and degree of change between the groups, the t statistic was computed on the pretest/post-test group difference mean. Major findings include: (1) Ss in SG showed less improvement in self concept than their counterparts in PG; (2) the Ss in PG showed significant

growth in reading, but no significant difference between the two groups was found in the areas of spelling and arithmetic. (13 refs.) - *C. M. N. Mehrotra.*

University of Denver
Denver, Colorado 80210

1401 ZASTROW, NANCY L., JUSTISON, GERTRUDE, & MILLER, ROZELLE. A ten year survey of the public day school program for the trainable mentally retarded in Anne Arundel County, Maryland (1955-1965). Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 32 p. Mimeographed.

A 10-year survey of 495 MR persons served by the day school program in Anne Arundel County, Maryland, was presented indicating specific problems and needs of this trainable population. A survey form was devised to obtain information on family background, test data, education, job training, work experience, and post-school information. This form as well as descriptive statistics are included in this report. Data indicate that: education and training programs for the TMR in Maryland should be mandatory, lack of transportation facilities and tuition costs prevent some eligible retardates from using the sheltered workshop and other centers, more adequate methods of communicating with parents are desirable, and the preschool program is especially valuable for TMRs. Moreover, a small residential facility in this county is desirable, and there is a need for a central registry of TMRs with data from many disciplines to facilitate local, state, and federal planning. Day care, occupational training, vocational centers, and recreational programs are also needed. Increased staff recruiting efforts are warranted as well as some curriculum revision. Specific standards for teacher preparation in Maryland are also discussed. (10 refs.) - *B. Bradley.*

Anne Arundel County Board
of Education
Annapolis, Maryland

1402 JONES, ROY J., TERRELL, DAVID L., & DE SHIELDS, JAMES I. Intellectual and psychomotor performance of preschool children from low-income families. *Psychology in the Schools*, 4(3):257-259, 1967.

To study the effects of preschool exposure in terms of intellectual and psychomotor development, 40 children were tested using the Stanford-Binet nonverbal tests at the 5-year level. Between pretest and post-test data, the mean IQ gain was 3 points (IQ range 66-137), which was not significant; however, the increase in psychomotor scores was significant ($p < .001$). A positive relationship between family income and mean IQ was found. No significant results were obtained for those children enrolled in preschool as compared with those not enrolled; however, the ultimate effect of the preschool experiences may not be discernible until later. (6 refs. refs.) - *C. A. Pepper.*

Institute of Youth Studies
Howard University
Washington, D. C. 20001

1403 MANN, EDWARD T.,& ELLIOT, C. COURTNEY. Assessment of the utility of Project Head Start for the culturally deprived: An evaluation of social and psychological functioning. *Training School Bulletin*, 64(4): 119-125, 1968.

This study represents the first phase of longitudinal research dealing with the effects of Project Head Start on affective and cognitive functioning of disadvantaged children in the rural Southwest. It was hypothesized that when disadvantaged children are exposed to experiences offered by a summer Head Start program corresponding changes would occur in intellectual and verbal ability, social maturity, and school adjustment. Utilizing objective techniques and a pre-post design, the results indicate statistical gains in all measured areas of cognitive functioning for those completing the summer Head Start program. (13 refs.) - *Journal abstract.*

New Jersey Diagnostic Center
Menlo Park, New Jersey 08837

1404 PRINCE, ROBERT J. Programs for the educable mentally retarded in Ecuador. *Special Education in Canada*, 41(3):10-14, 1967.

The only education programs provided for the EMR in Ecuador consist of an organized school for 35 students in Quito (the capital), and a group of 20 students who meet in private homes in Guayaquil. The curriculum at the Quito school includes Spanish, practical arithmetic, community living, self-care practices, and (in advanced classes) perceptual

training. The students help with housekeeping chores such as cooking. The main problems are: general poor health conditions (high incidence of goiter, malnutrition and lack of sanitation), lack of funds and trained personnel and the need for public education about MR (to remove the social stigma, etc.). (No refs.) - *E. F. Macgregor.*

No address

1405 VILLAGRÁN, RONALD O. Educacion especial en el niño retrasado mental hiperactivo. (Special education for the hyperactive mentally retarded child.) *Boletin Informativo Del Instituto Neurologico de Guatemala*, July (15):3-5, 1967.

The institutionalized hyperactive MR child should be grouped with similar children in a carefully constructed teaching program leading to systematization of learning activity. A flexible schedule of activities is essential. The purpose of such a class is to diminish the hyperactivity of the child and lead him to longer attention spans. Activities should stimulate sense-perception and improve listening habits. To increase listening ability the children remain completely silent for more than 10 minutes; during this time they follow simple orders which command their attention and coordination. Children who at first had short attention spans were able to leave the group and join a class of EMRs. (No refs.) - *C. S. Snow.*

Centro Psico Pedagogico
2a Calle 34-15, zona 7
Chalet Villace
Cuidad de Guatemala, Guatemala

1406 FELL, J. H. Further education in a hospital for the mentally subnormal. *Nursing Mirror*, 125(5):xi-xii, 1967.

Patients in evening classes at the Calderstones Hospital (Lancashire) are being prepared socially and intellectually for their return to the outside community. Co-educational classes include civics, art, music appreciation, and ballroom dancing. In addition, there are classes in beauty culture, domestic science, physical education, and sewing for girls and in woodwork and physical education for boys. The primary aim is to teach the fundamentals of everyday living, such as sewing on buttons, putting up a shelf, personal hygiene, and road safety. (No refs.) - *E. F. Macgregor.*

Calderstones Hospital
Whalley, Lancashire
England

1407 BOGUSLAWSKA, ANNA. ESN children in a primary school. *Forward Trends*, 2(2): 69-71, 1967.

A combination of remedial instruction and regular primary classes was effectively used to teach 2 MR boys (CAs, 7 and 8) to read and write. Both boys were awaiting admission to an educationally subnormal (ESN) school and spent 1 year in a primary school. One-half of the week they attended regular primary classes; they spent the other half in a 35-member remedial class where very little individual attention was available. Both boys made considerable progress during the year. A follow-up on 1 boy revealed that he continued to progress in an ESN school. Remedial aids included: *Reading Fun* by Schonell, Lotto, Word Bingo cards, and Stoll's Programmed Reading Kit. (No refs.) - *J. K. Wyatt.*

No address

1408 GALL, JOE. Model program for the retarded. *Motive*, 13(4):2-6, 26, 1967.

The Medina County Training School, with the active support of a large number of organizations and over 80 percent of the population, has a program which includes training, both at home and at the school, for MRs 2 to 19 years of age. Areas of training are: home trainers, pre-school, community class (learning word, color and number recognition), developmental class (learning shapes and colors), pre-vocational, sheltered workshop (payment on a piece-work basis), community placement, recreation (camping, swimming), and adult activity programs. A residential center is planned for handicapped county residents. (No refs.) - *E. F. MacGregor.*

No address

1409 BOWE, JAMES C. Lingfield Hospital School. *Medical and Biological Illustration*, 17(4):247-249, 1967.

Lingfield Hospital School, which was initially a colony for the residential and custodial care of epileptics of all ages, has developed into a facility where educable, epileptic children can receive a normal, useful education and intensive treatment for their convulsive disorder. While epilepsy is the major difficulty among the children, additional neurological and emotional handicaps exist. Medical, psychological, and educational personnel staff the facility. When a child is free from seizures for a year he is transferred to a normal school facility. Both regular and slow learner's courses are provided. Also the boys help in constructing some permanent facilities and girls take a domestic science course. Non-scholastic youth groups and activities are also represented. Recently new facilities for medical treatment and research have been opened. Of 1,000 patients discharged between 1952-1964, 800 replied to a questionnaire; 200 were self-supporting, 109 were unemployed, 128 were in hospitals for subnormals, and 37 were residing in colonies for chronic epileptics. Since 1963 between 1/4 and 1/5 of the patients were discharged to ordinary schools. Since early diagnosis and treatment of epilepsy has improved, the control and prognosis is better. Still some patients remain very resistent to treatment; these constitute a high proportion of the school's enrollment. (No refs.) - *E. Gaer.*

Lingfield Hospital School
Lingfield, Surrey, England

1410 MARSHALL, ANNE. *The Abilities and Attainments of Children Leaving Junior Training Centres*. London, England, National Association for Mental Health, 1967, 62 p. $2.95.

A survey of the attainments of a sample of 165 children (CA, 14-16 yrs) selected from 19 junior training centers in Britain suggested that some of the brighter children in these centers may be non-pathological individuals from sub-cultural backgrounds with functional intelligence levels located at the tail end of normal variation. The training centers were located in rural, small town, and industrial areas. Etiology of MR in the sample were: Down's disease (45 percent), familial (10 percent), brain injury at birth (10 percent), miscellaneous (10 percent), and unknown (25 percent). Assessment procedures included Gunzburg's Progress Assessment, Form I; Brimer's English Picture Vocabulary Test, Part I; Goddard-Seguin Formboard Test; Goodenough Draw-a-Man Test; Whitehall's "Look and Say" Reading Test; Stott's Bristol Social Adjustment Guide for Children in School; design drawing and social sight reading tests; and records of adverse background factors. With the exception of the reading tests, the test performance of the familial MR group exceeded that of the group who had experienced brain injury at birth. This order was reversed for the reading tests. Ss with Down's disease performed at a lower level than either of the other groups. Familial MRs had significantly (.01 level) more adverse background history factors than the other groups. They also tended to have the best social adjustment. Disorders of personality and emotional and social immaturity appeared to be at least as important as intellectual handicap in limiting community employment opportunities and training and habilitation arrangements. Emotional and motivational disabilities were found in SMRs as well as in those with lesser degrees of MR. (87 refs.) - *J. K. Wyatt.*

CONTENTS: General Introduction; Historical Introduction; The Aim of the Investigation; The Sample; The Results of the Investigation; Conditions in the Centres; Discussion; Summary; Background to the Survey by Peter Mittler.

1411 DUBNOFF, BELLE. Parents can be allies. *Digest of the Mentally Retarded*, 4(1): 2-7, 12, 1967.

When parents are helped to a better understanding of their child's problems, abilities, and limitations and the school's methods of coping with them, they are in a better position to enjoy and manage the child at home. Dubnoff School (California) has instituted: (1) parent discussion groups in which the parents can talk of their own problems, gain some insight into their own and their child's reactions, and derive support from the knowledge that they are not alone in having this kind of problem; (2) parent-teacher discussions to evaluate the child's progress and exchange information on changes at home or at school; (3) parent-administration consultations to present an evaluation of the

child's past performance and a projection of future programs; (4) crisis interviews for critical situations that may arise between regular conferences; and (5) family counseling to help the parents understand why and how the home environment should be changed to help the child. (No refs.) - *E. F. MacGregor.*

Dubnoff School for
Educational Therapy
North Hollywood, California

1412 BROWN, R. I. A remedial reading program for the adolescent illiterate. *Journal of Special Education*, 1(4):409-417, 1967.

A remedial reading program employing a method developed by Brown and Bookbinder has been used successfully in a number of different settings to raise the reading level of MR adolescents who were either initially unable to read or had reading ages below 10 years. The program involves individual 15-minute sessions, 5 days a week. The findings of several studies indicate that Ss who had previously made little progress in reading made considerable gains in a short period of time. The method is based on learning research and uses a phonic-based linear program and simultaneous presentation of visual and auditory material. Special advantages of this instructional method appear to be its emphasis on (1) the development of individual sounds which are either spontaneously reinforced if correctly emitted or spontaneously corrected if erroneously emitted, (2) the development of discrete sounds and their combination into meaningful wholes, (3) the development of visual shape recognition of individual letters in order to increase word perception, and (4) the development of word analysis and synthesis by learning to relate specific sounds to the letters representing them. The program does not produce fluent reading ability but does enable the reader to use an ever-widening range of reading material which will extend vocabulary and reading experience. Diagnostic procedures which assess learning and perceptual difficulties are used to direct specific aspects of the program to each individual's specific learning problems. (20 refs.) - *J. K. Wyatt.*

University of Bristol
Bristol, England

1413 SHEPERD, GEORGE. Reading research and the individual child. *Reading Teacher*, 21(4):335-342, 1968.

Two case reports are presented to illustrate that a comparison of the means of group performance does not adequately show the differences and potentials of the individual Ss within the group. EMR children were divided into adequate and inadequate readers as a result of scores on tests measuring reading ability and related factors. Although both Ss selected for study were in the adequate reading group, they revealed large differences in lateral dominance, emotional and social adjustment, economic status, adjustment in home environment, and mastery of skills in the reading process. Variation in these factors indicates that different remedial measures are needed for each child. The teacher should maintain a continuing evaluation of the needs and progress of each child and design the daily lesson plan to meet his individual needs. (9 refs.) - *E. F. MacGregor.*

University of Oregon
Eugene, Oregon 97403

1414 McLEOD, JOHN. Reading expectancy from disabled learners. *Journal of Learning Disabilities*, 1(2):97-105, 1968.

Reading disability is a nonspecific reaction to a series of environmental factors which need to be clarified for each individual before his potential can be predicted. Individual clinical diagnosis is preferred to an intelligence test as a predictor of reading potential. IQ tests are unsatisfactory predictors because: (1) verbal tests are contaminated with the verbal factor, while nonverbal tests have low correlations with reading; (2) IQ tests do not account for the apparent "over-achievers;" and (3) they tend to overestimate the number of "under-achievers" at higher levels of intelligence. Behavioral analysis of the developmental stage of the skills needed for learning will indicate appropriate remediation techniques. (16 refs.) - *A. Thomey.*

No address

1415 ROWE, CECIL ANN. Activities for bilateral fusion. *Academic Therapy Quarterly*, 3(2):111-112, 1968.

Although children who rotate and invert letters possess neither lateral organization nor bilateral fusion, a visual-motor manipulation technique can aid them in achieving the essential internal awareness that there is a difference between right and left. Using a strip of tag board in the left hand and a circle in the right hand, a child standing in front of a mirror can practice making a *b* while the teacher says, "The right hand makes a *b*." Then he advances to practicing *d*'s and finally to writing *b*'s and *d*'s upon request. Tracing the letters on the child's back or having him trace different sizes and shapes of the letters on textured surfaces often helps, as does playing games which call for differentiating between right and left. (No refs.) - *G. M. Nunn.*

DeWitt Reading Clinic
San Rafael, California 94901

1416 HASKELL, SIMON H. Impairment of arithmetic skills in cerebral palsied children and a programed remedial approach. *Journal of Special Education*, 1(4):419-424, 1967.

A comparison of the findings of a study which employed programed instruction (PI) and conventional methods to teach the 4 basic rules of arithmetic to 2 matched groups of cerebral palsied (CP) children (21 Ss per group; CA range, 9-16) indicated that achievement via the PI method was at least equal to that of the conventional method and that PI may have special advantages for CP children. The factors of deprivation of sensory-motor experiences, high incidence of ocular defects, perceptual disorders, disturbances in visuomotor skills, distractibility, perseveration, generalization difficulty, and above average incidence of emotional disturbance must be considered when arithmetic teaching methods for CP children are being planned. PI appeared to benefit the restless and withdrawn CP Ss, who tend to have the greatest difficulty with conventional methods. There is a need for a more refined series of stages in the PI material and for more careful grading of intellectual demands. (19 refs.) - *J. K. Wyatt.*

University of London
London, England

1417 CARTWRIGHT, G. PHILLIP. Written language abilities of educable mentally retarded and normal children. *American Journal of Mental Deficiency*, 72(4):499-505, 1968.

The written language abilities of 80 twelve through fifteen-year-old educable mentally retarded (EMR) and 160 eight through fifteen-year-old normal children were compared on the following language measures: composition length, sentence length, type-token ratio, percentage of usage of different parts of speech, grammar, and spelling. The normal children aged 12 through 15 obtained significantly higher scores than the EMR children on composition length, sentence length, type-token ratio, grammar, spelling, and percentage of usage of modifiers. The normal children aged 8 through 11 obtained significantly higher scores than the EMR children on type-token ratio, grammar, and spelling. (21 refs.) - *Journal abstract.*

120 Special Education Building
The Pennsylvania State University
University Park, Pennsylvania 16802

1418 TROTH, WILLIAM B. Procedures and generalizations for remediation in motor coordination and perceptual training for the mentally retarded. *Training School Bulletin*, 64(3):77-80, 1967.

A learning program stressing perceptual skills and motor coordination training produced more positive results with a group of young EMRs than with teen-age TMRs. Sutphin's "Learning to Learn Program" and Getman's visual-motor perceptual training program were used daily in addition to the regular curriculum of the Vineland Training School. Gross and fine motor training, rhythm, concept building, and the development of perceptual skills, including space-organization exercises, were major items in the program. The trainable group showed improvement in body coordination but did not evidence gain in visual perception. The EMRs improved in body coordination, attention span, perception of printed symbol, teacher rapport and reading readiness skills. The program has also improved background experience for beginning reading instruction, which can now begin at an earlier time. More research will be necessary in order to fully assess the effect of this training on the 2 groups of MRs. (5 refs.) - *M. L. Shelley.*

Training School Unit
American Institute for
Mental Studies
Vineland, New Jersey 08360

1419 GOLDSMITH, CAROLYN. The rhythmic basis for learning: Part I. *Academic Therapy Quarterly*, 3(2):108-110, 120, 1968.

For children with learning problems, exercises are helpful in developing an accurate body image, in amplifying the senses through sensory stimulation and kinesthetic experiences, and in extending alertness - all of which are necessary in improving a child's capacity to learn. Rhythm seeks balance between rest (equilibrium) and activity (disequilibrium) and gives the child information about things in time and space. Order and flow blend the parts of movement into a whole and give meaningful patterned adjustment, balance, succession, and continuity, which is the base for deduction and abstraction. Piagetian theory suggests that the development of reasoning is built on basic alternations of motor rhythms. However, in children with learning problems, there is disturbance in normal rhythmic movements - a lack of appropriate reaction. To aid such children, activities based on time, force, and space must be related to movement, sound, and graphic experiences. This kinesthetic approach to learning can increase receptivity to stimuli and promote specific rather than general responses. (5 refs.) - *G. M. Nunn.*

No address

1420 BLANCHARD, IRENE, & *HERRON, LINDA. Learning space perception with colors. *Cerebral Palsy Journal*, 28(6):11, 1967.

Classroom procedure is described for learning spatial concepts of: around, middle, center, front, back, upside down, above, below, from, to, away from, and toward. One technique makes use of colored patches for imitating the teacher's movements. (No refs.) - *J. Snodgrass.*

*Pacific State Hospital
Pomona, California 91766

1421 BORTNER, MORTON, ed. *Evaluation and Education of Children with Brain Damage*. Springfield, Illinois, Charles C. Thomas, 1968, 260 p. $8.50.

The contents of this volume are directed to professional workers who are concerned with evaluation and programing for brain-damaged (BD) children. The book is divided into 2 major sections, the first of which represents a multidisciplinary approach to evaluation. Disciplines represented are: hearing, speech and language, psychology, psychiatry, and neurology. The second section contains representative theoretical positions including those of Kephart, Gellner, Frostig, and Strauss and Lehtinen. The chapter on Gellner is one of the few published descriptions of her theory and teaching techniques. Much of the volume is devoted to discussions of devices, techniques, and general pedagogical strategies for the education of BD children. There are varying viewpoints, frames of references, and definitions which have not been reconciled due to the lack of conformity of usage at this time. The approach of this book allows for a multidisciplinary evaluation of diagnosis describing what examiners do and what criteria they follow in formulating their conclusions. The discussion relating to neurological considerations may be of special interest in evaluation of brain damage. Disorders of hearing and oral communication are described in terms of practical suggestions to the teacher about improving communication in the classroom. A basic tenet of this book is that there is no one stereotypic behavior from a child with brain damage, rather there are children with many types of brain damage who demonstrate a variety of behavior patterns and etiological factors. (222 refs.) - *B. Bradley.*

CONTENTS: Introduction - Brain Damage: An Educational Category? (Birch & Bortner); Disorders of Oral Communication (Mysak); Hearing Impairment (Zaner); Psychological Deficit (Bortner); Psychiatric Factors (Chess); Neurological Considerations (Boniface); The Educational Methods of Strauss and Lehtinen (Bortner); Teaching the Child with a Perceptual-Motor Handicap (Kephart); Educational Methods Based On the Gellner Concepts of Neurological Deficit (Patterson); A Treatment Program for Children with Learning Difficulties (Frostig); Curriculum Development for Children With Brain Damage (Weiner).

1422 BIRCH, HERBERT G., & BORTNER, MORTON. Brain damage: An educational category? In: Bortner, Morton, ed. *Evaluation and Education of Children with Brain Damage*. Springfield, Illinois, Charles C. Thomas, 1968, p. 3-11.

The validity of the term "brain damage" (BD) as an educational category is discussed and and its meaning and application re-examined. A historical analysis of the term "minimal

brain damage" indicates that 2 sets of criteria were used for differentiation of a heterogeneous institutional population. Initial criteria involve categorizing in terms of severity of intellectual defect, behavior patterns, and/or neurological dysfunction. The second criterion, which is related to the term "minimal brain damage," includes etiological factors, developmental environment, and damage to the CNS. Symptoms and causative factors are interrelated. Strauss and associates differentiated 2 broad types of patients, those "exogenously" retarded and those "endogenously" retarded, thus indicating that etiology is attached to symptoms and history. This fusion of levels has continued so that some children have been classified as BD on symptomatologic grounds only. Different criteria have been used by the same investigators in a single set of studies. Systematic criteria for differential diagnosis involving 5 essential factors such as symptomatology, etiology, pathogenesis, treatment response, and outcome have seldom been used in defining BD. The fact that a child has been diagnosed as BD is insufficient for determining his behavioral symptoms or educational therapy. The focus of education should be centered on those behaviors which define the child as a functioning organism. (11 refs.) - *B. Bradley.*

1423 BORTNER, MORTON. Psychological deficit. In: Bortner, Morton, ed. *Evaluation and Education of Children with Brain Damage.* Springfield, Illinois, Charles C. Thomas, 1968, Chapter 3, 64-94.

Careful documentation of the brain-injured child's strengths and weaknesses aids in determining the proper educational programs. Most conclusions regarding brain and behavior are of necessity not based on direct observation. Sources used in a medical diagnosis and dependent to some extent upon the ability of the diagnostician are: (1) historical information, (2) neurological signs, (3) developmental abnormalities, and (4) electroencephalography and pneumoencephalography. Areas of functioning which need to be evaluated include an estimation of the child's level of intellectual functioning which may serve as a context for observation of specific deficits, and a task-specific description of performance. The more precise the deficit, the easier it becomes to attempt some program for remediation. Categories regarding perceptual functioning should be meaningful for the teacher so that they can be translated into classroom learning experiences. Personality status may require a comprehensive assessment involving classroom behavior, peer relations, home behavior, and the nature of responses to life situations. Achievement tests standardized on normal populations should be used as a source in determining status in basic school subjects. Educational evaluation is a constant process based on achievement test data and classroom instruction procedures. The concepts of adapted testing and potential competence aid in determining the strengths and weaknesses of a child. (30 refs.) - *B. Bradley.*

1424 BORTNER, MORTON. The educational methods of Strauss and Lehtinen. In: Bortner, Morton, ed. *Evaluation and Education of Children with Brain Damage.* Springfield, Illinois, Charles C. Thomas, 1968, Chapter 6, p. 131-146.

The educational methods of Strauss and Lehtinen are summarized along with remedial techniques for reading, arithmetic, and writing skills. Behavior characteristics of brain-injured (BI) children are divided into 3 major categories: general behavior disorders, perceptual disturbances, and thinking disorders. The symptoms as described by Strauss and Lehtinen include: clumsiness, awkwardness, poor coordination, hyperactivity, disinhibition, and catastrophic reactions. Strauss and Lehtinen described perceptual difficulties associated with BI on the basis of a Gestalt orientation in which disturbances are considered in terms of part-whole or figure-ground relationships. They also related Goldstein's concept of forced responsiveness to their concept of perseveration. BI children are deficient in concept formation and may group objects in a manner which distinguishes them from normal peers and retarded children without neurological impairment. Remedial suggestions are given in terms of: (1) general principles, (2) perceptual problems, (3) reading, (4) arithmetic, and (5) writing. The methods generally used to aid in problems of distractibility, disinhibition, and hyperactivity are structuring the child's environment and providing opportunities for the child to exercise inner controls. Teaching arithmetic on the basis of Gestalt psychology consists of developing a visual-spatial scheme based on organized perceptual experiences which form a basis for numbers. Since reading problems are viewed as disturbances of behavior and perception, remediation is directed to these problems. (4 refs.) - *B. Bradley.*

1425 KEPHART, NEWELL C. Teaching the child with a perceptual-motor handicap. In: Bortner, Morton, ed. *Evaluation and Education of Children with Brain Damage*. Springfield, Illinois, Charles C. Thomas, 1968, Chapter 7, p. 147-192.

The method of educating a child with a perceptual-motor handicap should focus on instilling the perceptual-motor skills which the child has not developed. The teaching follows the developmental progress of the child, with attention directed to the development of essential motor patterns: balance and posture, contact, receipt and propulsion, and locomotion. A differentiation is made between a motor pattern and a motor skill; walking is a motor skill and locomotion is a motor pattern. The child with a perceptual-motor handicap has encountered an interference with the processes required for the development of motor patterns. To be meaningful, perceptual data must be matched to motor information. If no match occurs, confusion results. Perceptual factors should be introduced early in training to improve this relationship. The stages in the development of a perceptual-motor match include: (1) control of single acts, (2) control of continuous activities, and (3) control of sequential acts. After the child has formed some perceptual-motor control, he can be given more complex lessons in form perception and concept formation. (5 refs.) - *B. Bradley*.

1426 PATTERSON, RUTH M. Educational methods based on the Gellner concepts of neurological deficit. In: Bortner, Morton, ed. *Evaluation and Education of Children with Brain Damage*. Springfield, Illinois, Charles C. Thomas, 1968, Chapter 8, p. 193-222.

The application of educational methods based on the Gellner concepts of neurological deficit are described in relation to academic and social training of brain-injured children. Gellner has designated 4 types of disabilities affecting learning: visual-somatic (movement blindness), visual-autonomic (meaning blindness), auditory-somatic (word-sound deafness), and auditory autonomic (word-meaning deafness). According to this theory, each of these handicaps is related to pathology in a specific area of the midbrain. Problems accompanying these deficits may have a neurological or psychological basis. Gellner considered clinical types, gross physical anomalies, and extensive cortical damage separately. Research has been directed toward demonstrating the existence of these categories of deficit and teaching techniques. Gellner was concerned with young, severely handicapped children. She had advocated grouping of children in the classroom according to disability, but this became unrealistic. The achievement level has proved more practical, especially with small groups and individualized teaching. Teaching methods for the 4 Gellner categories are described for pre-readiness, readiness, and academic levels. Examples of strengths and deficits in each category are given along with discussion of teaching devices. Group activities are also included. The crux of the Gellner method when applied in the classroom is to teach through the child's strengths to reach his weakness, thus decreasing pressure and emotional disturbances. (24 refs.) - *B. Bradley*.

1427 FROSTIG, MARIANNE. A treatment program for children with learning difficulties. In: Bortner, Morton, ed. *Evaluation and Education of Children with Brain Damage*. Springfield, Illinois, Charles C. Thomas, 1968, Chapter 9, p. 223-242.

The treatment program of the Frostig Center of Educational Therapy is described in terms of the facilities and diagnostic services available for children with learning difficulties. There are over 200 enrolled in this center at any given time, and more than 300 children receive evaluations in a given year. The center focuses on educational facilities and child guidance while undertaking research and teacher training. Children usually are referred because of failure in public school with reports of learning problems and poor school adjustment. Specific difficulties as well as medical and psychiatric classifications vary. The most effective remedial program appears to be one which is based upon detailed and comprehensive testing and observation. The entire evaluation program attempts to assess the child's specific strengths and weaknesses in 6 areas: sensory-motor functions, language, perception, cognition, and social and emotional development. Clinical data have indicated that perceptual abilities, auditory and visual memory, and automatic learning are frequently deficient in children with learning difficulties. A global approach to remedial education is considered necessary for best results. Remedial approaches should fit the specific needs of the child. The general approach described involves the integration of visual-perceptual training with sensory-motor skills, language, and cognition. (14 refs.) - *B. Bradley*.

1428 WEINER, BLUMA B. Curriculum development for children with brain damage. In: Bortner, Morton, ed. *Evaluation and Education of Children with Brain Damage*, Springfield, Illinois, Charles C. Thomas, 1968, Chapter 10, p. 243-260.

The development of curriculum for children with brain damage (BD) is described in terms of educational programing for this population. There is a need for increased multidisciplinary cooperation and for broader knowledge and interest in this area. Diagnostic labeling may lead to stereotyping of children rather than to considering individual requirements. Specific attention should be directed to the developmental environment. The education of the BD child should provide for rehabilitation of functions which have been impaired and for increased stimulation of normal functions for social training and acquiring information and skills commensurate with the child's general level of maturation. Educational management can provide for particularized instruction and assistance in specific learning difficulties and can also provide motivation and consideration of intact functions. A functionally interpreted curriculum involving communication, behavioral tools, informational agenda, spatial and quantitative concepts, and self-actualization may be required. Curriculum may be defined generally to include perceptual, motor, conceptual, emotional, and social learning. The BD child who acquires competencies strengthens his chances for personal employment and satisfaction. He, like other children, requires vigorous physical activities of various types to promote overall strength, endurance, and well-being. Arts and crafts as well as music offer a wide variety of activities for BD children. Dimensions affecting the educability of handicapped children are level, rate, range, efficiency, and autonomy. Observations on an appropriate range of curriculum experiences along these dimensions would contribute to the study of educational achievement. (3 refs.) - *B. Bradley.*

1429 BIJOU, SIDNEY W. Research in the application of modern behavior theory to the education and training of the retarded. In: Illinois, Mental Health Department. *Community Day Centers for the Mentally Retarded in Illinois.* (Proceedings of the third annual meeting of executive directors.) Springfield, Illinois, 1966, p. 73-81.

Operant conditioning principles were applied to MR academic education to develop a functional motive system, mold study habits and classroom conduct essential for learning and devise beginning texts. Twenty-seven EMRs in 3 groups with academic ratings below second grade and mean CAs of 12-1, 10-4, and 10-2 were utilized. Eleven were brain-damaged, 3 mongoloid, 4 familial, and 9 of unknown etiology. Initial recalcitrant behavior was evident. Following continued misbehavior, the child was placed in a "time-out room" without comment from the teacher regarding his behavior. One of the timed tasks consisted of inserting missing letters on spelling cards. Ss were credited on assignments. Desirable responses were rewarded with social approval and tokens redeemable for trinkets. Two-hour lessons were given to the third year group. The reading program began with sight vocabulary, spelling, and phonetic skills. Other subjects were introduced in progressive steps. Academic failures were credited to the motive system and/or to the programed materials. The study was evaluated according to fixing baseline performance, varying conditions, and observation. Sequences were repeated to determine reliability and generality. Research centered on the individual. Future study plans entail continuing of the present work, writing more programs, and developing training programs on operant methods for the MR. (9 refs.) - *G. Trakas.*

1430 DURBIN, MARY LOU. *Teaching Techniques: For Retarded and Pre-Reading Students.* Springfield, Illinois, Charles C. Thomas, 1967, 260 p. $9.75.

Sequential skill development techniques may be used to prevent pre-reading problems with MRs and with pre-reading, delayed readiness, and disadvantaged students. The use of specific instructional techniques may aid the development of eye-hand coordination, visual perceptual skills, discrimination, and language abilities. Instruction should be geared to the specific needs of the individual child. EMR students need repetition of instruction, reinforcement, and interesting review material. Instruction for TMR students should be designed to help them control their hyperactivity and distractibility; stress vocabulary, communication and self-help training; and provide for the completion of simple tasks. Students experiencing a delay in readiness skills should have instruction paced according to their degree of readiness. Pre-school experiences for disadvantaged children can aid readiness by fostering self-image development and by providing for conceptual and vocabulary growth. A wide variety

of audiovisual aids can be used to introduce readiness skills and to provide interesting varied review and repetition experiences. Educators, special educators, and parents will find the suggested readiness materials and techniques a practical and helpful means of instruction. (43 refs.) - *J. Wyatt.*

CONTENTS: Introduction to Readiness Needs; Special Needs of Trainable Children; The Educable Retarded Child; The Child Who Is Delayed in Readiness Skills; Special Needs of Children; Readiness Skill Areas; Readiness Activities for Pre-readers; Activities for Skill Development of Retarded Children; Parent Contributions to Pre-school Readiness; Readiness Activities for the Disadvantaged Child; Audiovisual Aids in Reading Readiness; Readiness Skills and Audiovisual Media; Research Implications for the Trainable Child; Recommendations for Readiness.

1431 YOUNG, MILTON A. *Teaching Children with Special Learning Needs: A Problem-solving Approach.* New York, New York, John Day, 1967, 202 p. $4.95.

The purposes for writing this book are 3-fold: to emphasize individual differences among children, to encourage the deductive method of teaching, and to provide concrete assistance to teachers. Problem-solving, or diagnostic teaching, is the primary technique and individualized planning is the major emphasis. The goal is to encourage teachers to utilize their creative ability in teaching children with learning problems and, thus, to prevent these children from becoming failures. Labeling a child as MR, brain-injured, or maladjusted does not necessarily suggest a teaching approach. The teacher must eventually develop an educational program that is suited to the individual child, and the key to effective planning is a continuous, comprehensive evaluation of the child. This will help to identify many of the problems that interfere with learning. These problems come from at least 4 sources: the task or method, the individual child (physical and emotional), the teacher, and the school and community. Many activities and practices designed to improve reading, mathematical, behavioral, and developmental skills are suggested as an aid to teachers in helping children overcome learning problems. Teachers will find this book an extremely useful addition to their reference shelf. (38 refs.) - *A. Clevenger.*

CONTENTS: The School; The Classroom as a Positive Environment; Individual Evaluation; The Key to Effective Planning; Problems Encountered in Achieving the Goals of Education; Problems that May Interfere with Learning; Suggested Activities and Practices for Overcoming Learning Problems.

1432 VAIL, ESTHER. *Tools of Teaching: Techniques for Stubborn Cases of Reading, Spelling and Behavior.* Springfield, Illinois, Charles C. Thomas, 163 p. $7.50.

These remedial and tutorial teaching techniques for stubborn cases of reading and spelling were developed over an 11-year period to meet the needs of students with abilities ranging from highly superior to complete non-reading and with an age range from third grade to severely handicapped adult. Various approaches to reading should be used with each student, and no one approach should be considered better than another. Exercises, games, independent work, and progress tests can be used with each of the skills described Drama, music reading, and composition may be used to improve reading skills. The kinesthetic method is particularly useful with the severely handicapped. Severe misbehavior problems include normals, neurotics, and children in conflict with society. They are found mainly in exceptional children, particularly those in the lower abilities group. Teachers working with children should avoid embarrassing them, expressing anger or shock, or taking problems home. Teachers should try to make each child feel important, to maintain a detached and unemotional attitude, to minimize errors, and to maintain a sense of humor. This book is intended for classroom teachers, remedial teachers, and tutors. (9 refs.) - *J. K. Wyatt.*

CONTENTS: Discipline; Simple Linguistics; More Challenging Linguistics; The Refinements of Reading; The Five Ring Circus.

1433 WAGNER, GUY, & MORK, DORLAN. *Free Learning Materials for Classroom Use.* Cedar Falls, Iowa, State College of Iowa, The Extension Service, 1967, 75 p., $1.50.

Sources of selected learning materials are listed with annotations and suggestions for acquisition, classification, evaluation, and use. The materials, all of which are available without cost, are coded to indicate probable grade levels. A subject index is provided also. (4 refs.) - *J. Snodgrass.*

1434 OLSHIN, GEORGE M. IMC network report. *Exceptional Children*, 34(2):137-141, 1967.

The U. S. Office of Education (USOE) has funded 14 regional Instructional Materials Centers (IMCs) to "provide special educators and allied personnel with ready access to valid instructional materials and information related to the education of handicapped children." Their objectives and activities will be accomplished in 3 phases: in the service phase IMCs will (1) acquire commercial and teacher-made instructional materials; (2) describe, classify, and catalog these materials; and (3) disseminate information about them. In the research phase instructional materials will be evaluated and new materials will be developed. The third phase will also attempt to stimulate production of those materials proved effective and to consult with producers on ideas which they believe have merit. Several centers have already developed regional publications to disseminate current information regarding instructional materials, and a national publication will also be brought out. The IMCs and teachers will jointly develop new instructional materials from ideas conceived by teachers. The IMCs cooperate with other USOE programs, e. g., the Educational Resources Information Center, Captioned Films for the Deaf, and has available much of the instructional material developed by these programs. (2 refs.) - *C. M. N. Mehrotra.*

Bureau of Education for
the Handicapped
U. S. Office of Education
Washington, D. C.

1435 SPENCE, VALERIE. Libraries and slow learners. *Special Education*, 56(3): 26-29, 1967.

The slow learner has difficulty in school libraries because he is unskilled and inexperienced in using the system of classification, which requires relating of a particular item to a larger class. For example, when looking for a book on football he will have little training and experience in finding this subject under sport. The slow learner is further characterized by his low reading age. A survey of 32 English schools revealed 25 with libraries, 19 with classroom libraries, and 13 with both. Five of the schools had special rooms for children of low intellectual ability. Analysis of the library classification systems revealed that 2 special schools classified fiction according to the reading age level; 1 special school arranged books in a series; 1 special school arranged them in easy/hard grouping; all secondary schools arranged fiction alphabetically; and all educationally subnormal schools classified by subject, with 5 choosing subjects allied to classroom subjects. Forty-two percent of the pupils tested in special schools could find books requested. Library provisions in special schools were in many ways inferior to those of ordinary schools. Recommendations include: (1) all schools should have a central collection of books, (2) the modified form of the Dewey system should be adopted in all schools, (3) shelf guides should be placed in all school libraries, (4) greater financial allowance should be made for library provisions in special schools, and (5) a color system should be introduced to help the special school pupil identify subject categories. (5 refs.) - *J. Melton.*

South Hunsley County
Secondary School
Yorkshire, England

1436 GOLDBERG, I. IGNACY. *Selected Bibliography of Special Education.* New York, New York, Columbia University, 1967, 126 p. $2.50.

Basic selected references (the majority with publication dates between 1955 and 1966) pertinent to various fields of specialization in the education of exceptional children are presented for classroom teachers, administrators, legislators, college professors, students, librarians, parents, and community planners. The section on MR contains 510 citations grouped under general slow learners, educable, and trainable. The section on the habilitation of the MR contains 316 additional references. (1,816-item bibliog.)- *J. Snodgrass.*

CONTENTS: General References; Physically Handicapped; Mentally Retarded; Gifted; Emotionally and Socially Handicapped; Multiply Handicapped; The Habilitation of the Mentally Retarded (Younie).

1437 JORDAN, ELIZABETH C. The role of the teacher in the rehabilitation of the atypical child. *Forum*, 4(1):42-44, 1967.

The most important aspect in the total community approach toward helping the retarded child is the parents. Parents can contribute more effectively to this end result by reinforcing the teacher's efforts in education, training, and behavior, and by accepting the child's retardation and providing love and understanding. Parent counseling is an important tool in the total community approach toward helping the MR and his family. (No refs.) - *J. Melton.*

No address

1438 BISHOFF, BRUCE J. The role of the teacher in the development and implementation of curriculum (Symposium). *Forum*, 4(1):8-11, 1967.

"The lesson plan must be built around the individual children and be constantly adjusted during its execution according to the current responses of the children." In order to do this, teachers should have a wide range of teaching aids readily available. Since teachers are frequently required to make instant decisions, teacher training programs should include discussion or establishment of guide posts which will help them formulate more effective decisions. Consideration of the characteristics of the EMR is very important, for it was due to the exhibiting of these factors that the child was placed in the special education classroom. The characteristics include: (1) difficulty in departing from a concrete level and dealing with problems in the abstract realm, (2) need for immediate gratification and setting of short-term goals, and (3) gaps in the child's knowledge of background material within a subject area. Since parents attempt to pin the teachers down to specific long-term goals and since teachers generally do not know the full range of a student's potential, it is suggested that teachers describe the greatest future possibility in terms of percentage of probability. For their own use, teachers should employ long-term goals chiefly to indicate general directions of educational programs. (No refs.) - *C. M. N. Mehrotra.*

No address

1439 GREEN, LEONARD. The role of the teacher as a behavior agent (Symposium). *Forum*, 4(1):17-22, 1967.

There is a need for flexibility and adaptability in the special education programs. Teachers should take cognizance of the situation in which they work before they try to assess their students. The classroom should be regarded as a new and unique opportunity for the child to grow and progress. The atypical child, however, does not see it in this way. A good home and a good classroom should make the child feel that "This classroom is mine; I have a place here; I am wanted here; I am respected here; and I am needed here." The child in class should be made to realize that it is the present, not the past, which is important. Teachers with broad interests and background can easily form meaningful relationships with their students. They should have a sense of humor and should operate on a basis of optimism and patience. They should not moralize and should not strike out at children either verbally or physically. Teachers in special education should consider the advisability and worth of short-term concrete goals. They should closely scrutinize and evaluate their subject-matter. Children who need to act out and to break rules may be allowed to break 'chicken' rules. (No refs.) - *C. M. N. Mehrotra.*

No address

1440 FOSHEE, JAMES G., & HOWELL, HARRY. Marianna, Sunland, and Florida State University provide living-in experience for special education students. Paper presented at the 91st Annual Meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 6 p. Mimeographed.

For 4 years the Sunland Training Center at Marianna and Florida State University have cooperated in providing college juniors with trimester "living-in" experiences at the center for MRs. Teacher training which consists of planned experiences in all departments, is combined with the normal academic work load from the University. Students also have the opportunity to serve as cottage parents. It is thought that the value of this joint program will: produce more efficient teachers—

because of the pre-teaching exposure the student has, give the MR more individual attention, offer more opportunity for staff development, allow for a variety of programs, provide the staff with an analytical view of the program, and offer students an understanding of the problems that beset parents of MRs. Further benefits include the interest created among the residents in the community and the subsequent recruitment of students for the field of MR. Two other institutions have been formulating plans to engage in similar programs with the university. (No refs.) - *G. Trakas.*

Florida State University
Tallahassee, Florida 32306

1441 GOLDMAN, WILLIAM J., & MAY, ANNE. Teacher preparation: A development approach. *Training School Bulletin*, 64(4): 116-118, 1968.

A developmental approach is suggested using a variety of primary experiences to provide an understanding for the critical examination of variables in observation, selection, classification and interpretation of classroom behavior. Teacher preparation is a multi-modal and multi-media developmental process. (4 refs.) - *Journal abstract.*

State College at Fitchburg
Fitchburg, Massachusetts 01420

1442 GARFIELD, NORMAN. An in-service education program for non-teaching personnel in special education in public schools. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 18 p. Typed.

A proposed workshop program for in-service training of non-teaching personnel in special education in public schools is discussed in terms of increasing positive attitudes toward MR. Non-teaching personnel includes maintenance, clerical, and service employees of the school system. This program is directed specifically to custodial staff, drivers of vehicles, and lunchroom personnel. It focuses on orientation of this personnel to the philosophy of special education and to their responsibilities to the children and their problems. (6 refs.; 17-item bibliog.) - *B. Bradley.*

Ramapo Central School
District Number 2
Spring Valley, New York 10977

1443 SCHWARZ, ROBERT H. Special education or special classes? *Digest of the Mentally Retarded*, 4(1):54-56, 1967.

Assignment to high school special education classes, especially for the borderline retardate, may contribute to discouragement, resentment, acting out behavior, and irresponsibility. Any individual working within the field immediately senses the students' dissatisfaction with being placed in a special classroom and being labeled "mental" by his peers. For these reasons, desired changes in classification and placement of the junior and senior high school retardate are recommended. The special class can be terminated and replaced by a modified track system including both the student of low intellect and the borderline retardate. The latter would be assigned to homerooms on a random basis and would attend classes structured to provide the basic knowledge and skills necessary for social and intellectual adjustment to society. These classes would have a division of lower and higher ability levels aimed at appropriate learning deficits. If this track system is developed, inappropriate labeling of borderline students would be eliminated. For those of lower intellectual ability who do not fit into the track system, a vocational program or a sheltered workshop should be set up outside of the traditional public school setting. (No refs.) - *J. Melton.*

Research and Training Center
in Mental Retardation
University of Wisconsin
Madison, Wisconsin

1444 PROUTY, ROBERT W., & PRILLAMAN, DOUGLAS. Educational diagnosis in clinic or classroom? *Virginia Journal of Education*, 61(3):10-12, 1967.

Special diagnostic teachers should be trained and special diagnostic classes should be established within existing school facilities

for the purpose of diagnosing children's educational and behavioral problems and recommending appropriate remedial techniques. Since the classroom is the area where the student's problems exist, diagnostic teachers using diagnostic classes are in a better position to determine the problem, experiment and institute remedial measures, and be available to the regular classroom teacher for consultation and follow-up services. The school psychologist in this system can now assume the role of an expert consultant to the diagnostic teacher. The diagnostic class should not be segregated from existing regular school facilities and programs. Trust, flexibility, and responsibility must be mutual between the diagnostic teacher, the regular faculty, and school administrators. Without this atmosphere, the success of the program will be dubious. Diagnostic teachers should be trained in basic education methodology, child psychology, and learning theory. (No refs.) - *E. Gaer.*

George Washington University
Washington, D. C.

Vocational Habilitation - Rehabilitation

1445 ELKIN, LORNE. Predicting performance of the mentally retarded on sheltered workshop and non-institutional jobs. *American Journal of Mental Deficiency*, 72(4):533-539, 1968.

Performance of MRs in experimental jobs and domestic employment was analyzed in 2 experiments to determine predictive factors. Experiment 1 was directed toward investigating the value of the work sample technique and other independent variables in predicting the performance of EMRs on experimental jobs in measuring job performance as a continuous variable, and in assessing the validity of the experimental job. Twenty-nine male and 30 female EMRs from the Saskatchewan Training School (WAIS IQ, 50-75) were measured qualitatively and quantitatively on a tool assembly task. The Ss worked in groups of 15 for 4½ hours spaced over a 7-hour period. Twenty-one predictor measures also were administered to the group. The results support the "general ability" hypothesis that psychomotor and intellectual skills are closely related in retardates. The Bennett Hand-Tool Dexterity Test was the only measure on which a significant difference between males and females correlated with performance. Significant correlations were found between male performance and 16 predictor variables and between female performance and 13 predictor variables. Better workers had higher intelligence, more adequate psychomotor skills, and superior performance on work samples. In experiment 2, the performance of MRs on a non-institutional job was measured according to assessment techniques from experiment 1. Eighteen MR females were employed as domestic workers in various locations throughout Saskatchewan. Prediction variables included 8 independent measures which had demonstrated significance in experiment 1. Job performance was assessed by each worker's supervisor. The results showed that only the O'Connor Finger Dexterity Test was significantly related to performance on domestic jobs. The failure to find correlative predictive measures was due to inadequate criteria and biased employee selection. (14 refs.) - *B. Bradley.*

Saskatchewan Training School
Saskatchewan, Canada

1446 Jewish Employment and Vocational Service. Final report, Vocational Rehabilitation Administration Project RD - 1527, U. S. Department of Health, Education and Welfare. Bitter, James A. St. Louis, Missouri, 1967, 33 p.

The objectives of the demonstration Work Experience Center established for MRs (CA, 16-21; IQ, 40-65) by the St. Louis Jewish Employment and Vocational Service were: (1) to apply knowledge obtained from an earlier project to a different setting; (2) to demonstrate the effectiveness of a cooperative MR habilitation service which involves a public school, a state vocational rehabilitation agency, and a private rehabilitation agency; (3) to develop guidelines for services for MRs; and (4) to increase the number of employed MRs. Program emphasis was on reality-oriented experience, total case coordination by 1 counselor, and the extension of habilitation services into the community. A 5-phase program provided general vocational adjustment and specific job preparation training by

utilizing intra-mural and extra-mural resources. Implications for rehabilitation personnel include: (1) having the production shop reality-oriented, (2) extending the habilitation services to the community, (3) providing specific job training in a vocational sequence, (4) utilizing industry as a potential training resource, (5) offering continuous vocational evaluation, (6) examining the current wage and hour law interpretation and work-study scheduling, (7) using case management as the method of programing, (8) providing long-term programing when needed, (9) requiring transportation training, (10) introducing habilitation programing early in the school curriculum, and (11) developing a realistic self-concept. (34 refs.; 13-item bibliog.) - *J. K. Wyatt.*

CONTENTS: Background; Principal Project Developments; Current Program; Implications; Summary.

1447 New York. The Governor's Council on Rehabilitation. *New York State Program and Services in Rehabilitation: Background for the Development of a Comprehensive Plan for Rehabilitation in New York State.* Fenton, Joseph, & Thompson, Martha M., eds. Albany, New York, 1966, 165 p.

Since 1960 the Interdepartmental Health and Hospital Council of New York has maintained a Committee on MR to facilitate interdepartmental communication, to coordinate departments that provide services for MRs, to organize interdepartmental planning, to project needed legislation, and to review voluntary agency programs. Major committee program developments have included statewide testing for PKU, community MR institutes, the development of an interdepartmental publication on MR, and the employment of MRs in New York State Civil-Service positions. The Division of MR is responsible for the supervision of the 27,500 MR patients who reside in 10 state institutions. Institutional goals center around providing the training each patient needs to achieve his highest level of independent living. The institutions also offer preadmission, diagnostic, and general counseling services. (No refs.) - *J. K. Wyatt.*

1448 LINDEMANN, T. E. The community workshop - Its reality. *Project News of the Parsons State Hospital and Training Center*, 3(7):14-19, 1967.

Mid-America Rehabilitation Center, Inc. (MARC) is concerned with developing self-respect in the handicapped by training them to perform successfully in community employment or in a sheltered workshop. MARC's purpose is to prove that handicaps can be overcome and that an essentially rural community can produce enough work to make the workshop self-supporting. The services it offers include: (1) rehabilitation for the mentally, physically, and culturally deprived; (2) temporary employment, training, and/or vocational evaluation; (3) pre-vocational training for special education graduates; and (4) terminal employment facilities for those unable to go into the community. At present the main difficulties are that there are no adequate methods of determining the vocational aptitudes and inclinations of the handicapped and that so many potential clients and their families lack the necessary motivation. Maintaining a sufficient volume of work is not a problem because enough contracts are on hand or in prospect to supply all the jobs MARC workshops can handle. (No refs.) - *E. F. MacGregor.*

Mid-America Rehabilitation
Center, Inc.
Parsons, Kansas 67357

1449 MORGAN, M. R., & PEACEY, M. S. The Spastics Society's careers advisory services. *Developmental Medicine and Child Neurology*, 9(6):745-756, 1967.

The careers advisory services of the Spastics Society in Great Britain are described. The services range from giving vocational guidance to cerebrally palsied university graduates to helping the very heavily handicapped to find a place in a residential center. Among suggestions for the future are that professional people should be better educated in the special problems of cerebral palsy, that more openings in industry and commerce should be sought for the handicapped, and that all large towns should have at least 1

311-967 O - 68 - 9

day work center for handicapped people who cannot compete in open or sheltered employment. (3 refs.) - *Journal summary.*

Social Work and Employment
Department
The Spastics Society
12 Park Crescent
London, W. 1, England

1450 VRIEND, JOHN. The retardate leaves home: Two cases. *Vocational Guidance Quarterly*, 16(2):93-96, 1967.

The success of government and community cooperation in vocational training and job placement of the MR has raised the question of how to compromise between the retardate's desire for complete independence away from home (resulting from his successful employment) and his inability to cope with the problems of living alone. Case histories of 2 young men illustrate the problem; they were successfully employed but were unable to survive the rigors of independence. Responsible people need to recognize the problem and provide plans, organizational structure, and funds for the implementation of a solution. (4 refs.) - *E. F. MacGregor.*

Eastern Michigan University
Ypsilanti, Michigan

1451 PARSON, ROBERT L., & MOORE, JAMES C. New wine in old bottles. *Rehabilitation Record*, 8(2):1-6, 1967.

The findings of a project at Arkansas State Hospital indicate that using a feasibility criterion as a basis for accepting or rejecting MR, mentally ill, or alcoholic custodial clients for rehabilitation services should be re-evaluated. Currently used screening methods such as interviews, social histories, work histories, psychological tests, motivation assessment, interests, desire for service, aptitude testing, job sample testing, intelligence, education, and evaluation of moral fiber were proved ineffective in determining feasibility for rehabilitation services. In the period between referral and acceptance for rehabilitation services, adult MRs were the most neglected and often the most rejected. When given the services needed, this group was the most successful in maintaining employment in the community. The relationship between level of intelligence and success in rehabilitation proved to be the reverse of what had been expected: as client intelligence level decreased, the client's chances of success in maintaining himself in the community increased. Instead of using feasibility as a criterion, it was recommended that: (1) when clients apply for rehabilitation services, they should be accepted; (2) IQ tests should only be used when training or jobs require academic achievement; (3) testing devices that determine work interest and tolerance should be developed and used; (4) rehabilitation services should include family counseling, home visits, homemaking help, and provisions for living situations; (5) initial failure should be anticipated and provided for; and (6) closed circuit television consultation should be made available to medical consultants and counselors in remote areas. (No refs.) - *J. K. Wyatt.*

Arkansas State Hospital
Benton, Arkansas 72015

1452 GARRETT, JAMES F. Examples of psychological research in rehabilitation. *Rehabilitation in Australia*, 4(5):13-15, 1967.

Psychological research in rehabilitation in the United States is presently concerned with cognitive processes, differential psychology, learning, personality, and social-psychological theory. Examples of current research are cited to demonstrate the diversity of the investigations supported by the Vocational Rehabilitation Administration in the area of psychological research. (No refs.) - *J. Melton.*

Vocational Rehabilitation
Administration
Washington, D. C.

1453 MARGULEC, I., ed. *Cerebral Palsy in Adolescence and Adulthood.* Tel-Aviv, Israel, Jerusalem Academic Press, 1966, 267 p. (Price unknown).

An investigation of CP in adolescence and adulthood is described on the basis of the medical, social, psychological, and vocational factors involved in their rehabilitation in Israel. Of the 800 persons referred for study, 655 were given initial screening; 586

CP cases were diagnosed and included in the medical-social study. Of this number, 198 obtained a thorough assessment directed toward vocational adjustment. The highest age-specific prevalence rate was found in groups between 15 and 19 years of age. There was a preponderance of males in this series with spasticity considered the main type of CP. Etiological factors were variable, but prenatal and natal causes were present in more than 44 percent of the cases. Delayed development was found in 78 percent of the 586 CP surveyed. EEG recordings were not particularly helpful in diagnosing CP. More than 50 percent of the Ss showed retardation (IQ of below 70); this is comparable to data obtained in other studies. Vocational assessment was completed in actual work situations with the average time of evaluation extending over a 5-month period. There was no relationship between rehabilitation potential and type of CP, but there was a clear indication that hemiplegics had better prospects for rehabilitation. Ss with higher educational achievements had more unrealistic vocational expectations. The age groups of 14-19 years were immature and less motivated than older persons. Among the Ss recommended for vocational rehabilitation, 46.5 percent required sheltered employment or home-bound work. In spite of many severely handicapped CP referrals, 1 out of 3 was recommended for some type of vocational rehabilitation under regular sheltered conditions. (53 refs.) - *B. Bradley.*

CONTENTS: The Screening of the Cerebral Palsied: Epidemiological, Neurological, and Social Aspects; The Assessment of Cerebral Palsied: Psychological and Vocational Aspects; Summary, Conclusions and Recommendations.

1454 New York University Schools of Business, & President's Committee on Employment of the Handicapped. *Conference on Unskilled Workers in the Labor Force: Problems and Prospects.* Gitlow, Abraham L., ed., New York, New York, 1966, 33 p.

Problems and proposals related to the employment of unskilled workers, especially MRs, are discussed in the light of the present labor market. Since the need for unskilled labor in industry is declining, there is a need for training programs for MRs. These programs should be designed to equip the MRs with specific marketable skills. It is possible that industry could increase its employment of unskilled workers if it would institute more realistic job hiring requirements, provide expanded and effective training programs, redesign jobs, and recruit unskilled workers for existing jobs. This program would increase the employment contribution of MRs. The patience, conscientiousness, low turnover and absentee rates, and the MRs' satisfaction with the performance of simple, repetitive jobs makes them attractive prospects for unskilled jobs. (No refs.) - *J. K. Wyatt.*

1455 HENNING, JOHN F. America's unskilled workers: Past, present and future. In: New York University Schools of Business & President's Committee on Employment of the Handicapped. *Conference on Unskilled Workers in the Labor Force: Problems and Prospects.* Gitlow, Abraham L., ed., New York, New York, 1966, p. 4-13.

Because of the constant decrease in the need for unskilled labor, employment preparation for MRs should emphasize the provision of the kinds of training necessary to meet the needs of the current labor market. The Manpower Development and Training Act (MDTA) of 1962 provided training funds to help the unskilled attain semi-skilled capabilities and to aid in upgrading skilled workers. An additional provision allowed for experimentation with training procedures. Of the 343,000 workers who have received training under MDTA programs, 24,000 (7 percent) have been handicapped workers. Almost 80 percent of those handicapped workers who completed the training were placed in jobs. On-the-job continuance rate at the end of 1 year was 70 percent. (No refs.) - *J. K. Wyatt.*

1456 DIAMOND, DANIEL E. America's unskilled workers: Some problems and solutions. In: New York University Schools of Business, & President's Committee on Employment of the Handicapped. *Conference on Unskilled Workers in the Labor Force: Problems and Prospects.* Gitlow, Abraham L., ed., New York, New York, 1966, p. 14-24.

Individual firms can increase their profitable employment of unskilled labor by using realistic hiring requirements, training in work-tasks and company policies, redesigning jobs to fit the training and skills of the available labor market, and recruiting unskilled workers. Research evidence indicates

that both MR and physically handicapped persons can be satisfactorily employed. MRs usually come to an unskilled position with a background of vocational rehabilitation training which has included instruction in work rules and procedures, development of skills, and familiarization with the requirements of a production schedule. They require no more training than normal workers, although the nature of their training requirements differ. Training for MR workers should be specific and concrete. Because of their conscientious nature, attention to detail, and willingness to work at routine jobs, MRs make excellent candidates for many sub-professional positions. (No refs.) - *J. K. Wyatt.*

1457 CONNOR, JOHN T. All the people: Resources of America. In: New York University Schools of Business, & President's Committee on Employment of the Handicapped. *Conference on Unskilled Workers in the Labor Force: Problems and Prospects.* Gitlow, Abraham L., ed., New York, New York, 1966, p. 25-33.

The people of the United States represent its greatest resource, and in order for them to be utilized effectively they need to have opportunities to use their individual resources. Women, older persons, and MRs represent sources of untapped manpower. MRs can perform effectively in industry and in the federal government. Their labor does not need to be restricted to the confines of a sheltered workshop. Unskilled industrial jobs represent advancement for MRs. They can perform simple, repetitive tasks which would be boring for the normal worker. They usually have low absentee records and low turnover rates. (No refs.) - *J. K. Wyatt.*

1458 AYERS, GEORGE E. *Selected References on the Education and Vocational Rehabilitation of Mentally Retarded Adolescents and Adults.* Mankato, Minnesota, Mankato State College, 1967, 150 p. (Price unknown).

This 2,206-item bibliography, selected from the education, health, medicine, and rehabilitation literature published from January 1940 to January 1967, focuses on the education and vocational rehabilitation of the retarded. It was compiled by using major abstracting services and by thoroughly investigating all journals which contained articles on the topic. A 75-page author-subject index is included. (2,206 bibliog). - *J. Snodgrass.*

Recreation

1459 KEERAN, CHARLES V., & GROVE, FRANCES A. Assessing the playground skills of the severely retarded. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 9 p. Mimeographed.

Playground progress sheets (PPS) were formulated to give more quantifiable information about the limitations in the severely and profoundly retarded residents' ability to use playground equipment. Basically, the PPS are lists of the skills which must be learned by a child before he can proficiently use a given set of equipment. For purposes of analysis, each list was divided into levels of proficiency: (1) S has no skill or is unskilled in the use of the equipment, (2) S makes minimal use or very slight use of the equipment, (3) S does moderately well but needs help with certain elements, and (4) S can use the equipment proficiently by himself. In order to see how well the PPSs described the characteristics of patients with a wide range of capacities, they were used to record the playground skills of Hospital Improvement Project (HIP) patients and 400 other patients. It was noted that: (1) both groups were quite similar at the lower end of the scale on all items except the use of the stair slide, an activity in which HIP patients did not fare as well, (2) the main differences occurred in the mid-range and upper limits, (3) non-HIP patients scored more heavily in the proficient range, and (4) the PPS were more discriminating in describing the skills of the HIP group than those of the more capable non-HIP group. Since the scale appears very elementary, it may not be of much value as a device for the moderate and mildly retarded groups. (No refs.) - *C. M. N. Mehrotra.*

UCLA Neuropsychiatric Institute
Los Angeles, California

1460 FISCHER, JEANNE L., & CARTER, DOROTHY J. Recreation and physical therapy in a summer program for handicapped children. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 5 p. Typed.

An 8-week summer recreational program, combined with physical therapy, was instituted by the park commission and public schools of Tacoma, Washington, for 120 multi-handicapped children. The therapy stressed immediate treatment. At the end of the program, an individual progress report of the child was forwarded to the State Health Department and to the schools. The program was one of relaxation and fun aimed at improvement in motor development. Results showed how 2 agencies could cooperate in a united effort to improve social, emotional, learning, and motor growth of the multi-handicapped child. (No refs.) - *J. Melton.*

Truman School
Tacoma, Washington

1461 MORGENSTERN, F. S. Psychological handicaps in the play of handicapped children. *Developmental Medicine and Child Neurology*, 10(1):115-120, 1968.

The play of mentally handicapped children differs from that of their normal peers in its brief duration and the repetitive nature of its content. To some extent this may be traced to impairment of motivation, handicaps of perception and learning, and distractibility. These aspects of mental handicap in children are pursued along with illustrations taken from the literature of experimental psychology. Brief concluding reference is made to the recent application of teaching machines to the play of severely handicapped infants and the implications this carries for the therapeutic development of play for the mentally handicapped child. (22 refs.) - *Journal summary.*

University of London
57 Gordon Square
London W. C. 1, England

1462 RUBIN, MORRIS, & PLUMMER, EVERETT. A summer swimming program in a residential institution. *Digest of the Mentally Retarded*, 4(1):18-20, 23, 1967.

A swimming program initiated for the EMR at Ruston State School and carried out by cottage parents trained as instructor aides proved very effective. Each child progressed at his own pace and, as he learned 1 skill, moved on to the next. Every child accomplished something - if only to put his face under water - and this feeling of accomplishment carried over into other phases of his daily living. (4 refs.) - *E. F. MacGregor.*

Ruston State School
Ruston, Louisiana 71270

1463 KEEVER, BARBARA A. Scouting pointed the way for Gary. *Digest of the Mentally Retarded*, 4(1):52-53, 1967.

The inclusion of a 14-year-old MR boy in the activities of a troop of normal Boy Scouts greatly enriched his life and enhanced his self respect. A detailed account is given of the boy's scouting experiences. (No refs.) - *E. F. MacGregor.*

No address

1464 1968 annual directory of summer camps for learning-disabled children. *Academic Therapy Quarterly*, 3(2):96-98, 1968.

Seven summer camps located in California, Maryland, New York, Pennsylvania, and Canada are listed which provide programs designed specifically for children with learning disabilities. Features mentioned for each camp include: the program, age-range, capacity, date of sessions, and fee. (No refs.) - *G. Trakas.*

1465 PRICE, WILLIAM F., & LUNAN, BERT. Little grassy facilities. *Mental Retardation in Illinois*, 1(3):31-32, 1967.

A camping program for the handicapped and MR in the southern Illinois area accommodates 60 MRs in residence. The counselor-camper ratio is kept at a level of at least 1 to 3. The basic philosophy is that the MRs can enjoy and benefit from the experiences available. The program includes a variety of activities such as boating, swimming, arts and crafts, and hiking. Recently, a zoo, organized vocal music, and art instruction have been added to the program. MRs in residence as long as 6 weeks are also provided with programs in speech development and correction, special education, and physical

fitness. In addition to providing opportunity for enjoyment, the staff hopes that the MRs will also learn more adequate social skills. The facilities function on a year-round basis and are used by a variety of community organizations. (No refs.) - *E. R. Bozymski.*

Southern Illinois University
Carbondale, Illinois

1466 MORGENSTERN, F. S. Facilities for children's play in hospitals. *Developmental Medicine and Child Neurology*, 10(1): 111-114, 1968.

Children in hospital need play facilities which provide a wide range of stimuli, presented so as to claim the children's attention. Children confined to bed can have their beds moved periodically to avoid monotony in the environment, and the bed can be fitted with attachments which allow the child to reach and handle his toys more easily, and provide extra stimuli for mentally handicapped children. Playrooms for mobile children benefit from additional apparatus, such as low wall-bars and ropes suspended from the ceiling. Outdoor play areas should have irregular contours, and their structural elements may need to be changed to suit particular groups of children. It is most important that staff should be available to help with and show interest in the children's play activities. (No refs.) - *Journal summary.*

University of London
57 Gordon Square
London W. C. 1, England

1467 INFORMATION CENTER - RECREATION FOR THE HANDICAPPED. *Recreation for the Handicapped: A Bibliography*. Carbondale, Illinois, Southern Illinois University, 1965, 48 p. (Price unknown).

This 683-item bibliography is concerned with various aspects of recreation for the handicapped and includes references published during the period from 1950 to 1965. The entries, arranged under major interest categories, were selected from the literature of recreation, physical education, rehabilitation, special education, speech correction and sociology. Yearly supplements will be published. (683-item bibliog.) - *J. Snodgrass.*

CONTENTS: General Philosophy; Administration of Recreation Facilities; Leadership and Management; Programs; Characteristics of Groups; Training and Experience for Recreational Personnel; Community Development; Audio-Visual Materials; Institutional Recreation; Multi-Disciplinary Activities in Recreation; Standards and Accreditation Policies; Socialization and Rehabilitation; Bibliographies.

1468 INFORMATION CENTER - RECREATION FOR THE HANDICAPPED. *Recreation for the Handicapped: A Bibliography - Supplement I.* Carbondale, Illinois, Southern Illinois University, 1967, 24 p. (Price unknown).

The 442-item bibliography on recreation for the handicapped supplements the first volume of 1965 and covers publications from January 1965 to January 1967. The citations, arranged in major interest categories, were selected from the literature of recreation, physical education, rehabilitation, special education, speech correction, and sociology. (442-item bibliog.) - *J. Snodgrass.*

CONTENTS: General Philosophy; Administration of Recreation Facilities; Leadership and Management; Programs; Characteristics of Groups; Training and Experience for Recreational Personnel; Community Development; Audio-Visual Materials, Institutional Recreation; Multi-Disciplinary Activities In Recreation; Standards and Accreditation Policies; Socialization and Rehabilitation; Bibliographies.

Residential Services

1469 KING, ROY D., & RAYNES, NORMA V. Patterns of institutional care for the severely subnormal. *American Journal of Mental Deficiency*, 72(5):700-709, 1968.

The differences in the patterns of everyday life activities among 3 comparable groups of severely subnormal, but fully ambulant children are documented in this study. The 3 groups were cared for respectively in: a hospital ward, a voluntary home, and a local authority hostel. The pattern of life in the

ward is found to be regimented and unstimulating, while that in the hostel is individualized and enriching. The pattern for the voluntary home includes elements found in both the other institutions. It is argued that these differences in patterns of care cannot be accounted for by differences in the presenting problems of 3 groups of children. Some possible effects of the different environments are indicated, and some factors which need to be considered in accounting for the differences in residential environments are suggested. (22 refs.) - *Edited journal abstract.*

Department of Child
Development
University of London
57 Gordon Square
London W. C. I., England

1470 McKEOWN, THOMAS, & LECK, IAN. Institutional care of the mentally subnormal. *British Medical Journal*, 3(5565): 573-576, 1967.

An investigation of the 1,652 patients in 13 hospitals for the MR in Birmingham, England, revealed that only about half needed the nursing and psychiatric care available there, while the other half really needed training and employment. The patients were classified into those who required: investigation or active hospital treatment (0.4 percent), mental and basic nursing (22.2 percent), mental nursing (17.3 percent), basic nursing (12.8 percent), checking and counseling (18.3 percent), and sheltered environment (29.0 percent). The number of patients (7) who required medical investigation was very small - and lower than previous estimates, while about half the patients (871) seemed to need nursing care. The differentiation between nursing care and care that could be provided by an untrained staff was an important distinction, since the British Ministry of Health memorandum [(65)104] recommends that hospital responsibility should be limited to patients needing medical and nursing care. If the other patients were provided for by sheltered environments other than a hospital, the resulting reduction in the number of MR patients would make it possible to treat all the hospital patients at a common center. In this way greater attention could be given to improving the standard of care and research investigation. (5 refs.) - *R. Froelich.*

University of Birmingham
Birmingham, England

1471 WEIR, T. W. H. Institutional care of the mentally subnormal. *British Medical Journal*, 4(5579):619, 1967. (Letter)

A better defined policy for care of the MR in England and Wales is needed; it should include the concept of continuity of care. In northern Ireland, authority for care of the MR is vested in the Northern Ireland Hospitals Authority, which is responsible for community as well as residential care. Three regional special-care management committees administer a program that includes ascertainment, training centers, sheltered workshops, hostels, residential treatment, training of nursing and teaching staff, and an employment service for trained youth. (3 refs.) - *J. Snodgrass.*

Muckamore Abbey Hospital
Muckamore
Co. Antrim, Ireland

1472 SILVERSTEIN, A. B. A dimensional analysis of institutional differences. *Training School Bulletin*, 64(3):102-104, 1967.

Factor analysis of 13 variables for 130 public institutions for the MR revealed that the 4 factors which account for almost 95 percent of the common variance are: staffing adequacy (cottage and medical personnel); staffing adequacy (teachers, psychologists, and social workers); institutional age, size, and overcrowding; and resident competence. "Factor scores" were determined by adding up those variables on each factor for which the institution was above the median; scores compiled for 7 geographical regions were averaged and a rank determined for each region. Results indicate that an institution may be adequate in one area but inadequate in others and that 2 or more institutions may differ in 1 area but remain similar in all other areas. It is suggested that other variables be used in further studies to determine a more accurate measure of institutional differences. (2 refs.) - *M. L. Shelley.*

Department of Mental Hygiene
Pacific State Hospital
Pomona, California

1473 National Council of Social Service, Committee of Enquiry. *Caring for People: Staffing Residential Homes.* London, England, George Allen & Unwin Ltd., 1967, 222 p. $3.61.

A survey of residential services available for men, women, and children in old people's

homes, schools, hostels for the handicapped, and special schools for the blind, deaf, maladjusted, and educationally subnormal (ESN) revealed personnel shortages and turnover indicating a need for improved working conditions, career structuring, and training in all forms of residential care. Special schools for ESN children had an average of 55 residents who ranged in age from 5 to 15 years. The ratio of boys to girls was 1.8 to 1, and the ratio of residents to full-time staff was 7.9 to 1. Homes for ESN adults had an average of 19 residents fairly evenly divided between men and women. Resident-staff ratio was 6.3 to 1. Analysis of the training qualifications of full-time staff in ESN schools revealed that 65 percent had no training, 12 percent had a certificate of education, 12 percent had certificates in residential child care or its equivalent, 9 percent had nursing qualifications, 1 percent were nursery wardens, 4 percent were qualified in craft teaching, 3 percent were qualified in domestic science, 2 percent had university diplomas, and 1 percent had social science diplomas. Annual staff loss in ESN schools for a 12-month period was 28 percent, while annual replacement was 26 percent. Recommendations for changes in work conditions included institution of a 40-hour work week, extension of vacation time to 4 weeks plus a bank holiday, provision of good accommodations for all staff, experimentation with extended use of nonresidential staff, and establishment of National Salary Scales. Plans for 1 and 2-year training programs are included. This book should be of special interest to social workers and to those charged with planning residential care facilities. (No refs.) - *J. K. Wyatt.*

CONTENTS: The Problem Before Us; The Nature of the Job; Historical Background; The Survey Enquiry; The Future Demand; Conditions of Work; Residential Work As a Career; Training; Community and Committee, Conclusion.

1474 EYMAN, RICHARD K., TARJAN, GEORGE, & McGUNIGLE, DIANE. The Markov chain as a method of evaluating schools for the mentally retarded. *American Journal of Mental Deficiency*, 72(3):435-444, 1967.

An example of program evaluation using a version of a Markov chain based on a 4-year follow-up of an admission cohort to an institution for the MR is presented. In this study, a group of school patients was compared with a group of non-school patients in terms of probabilities of transition from 1 status to another along a "desirable-undesirable" continuum. It was apparent from the results that the school patients have a better prognosis than non-school patients in terms of final outcomes. The probability of a change of status at a particular time after admission was found to relate to age and school enrollment. Since hospitals and situations vary greatly, it is best to view the results of this study as an example of another alternative method available to those interested in program evaluation. (10 refs.) - *Journal abstract.*

Pacific State Hospital
P. O. Box 100
Pomona, California

1475 SMITH, F. VINTON. New elements in a comprehensive training program for the severely and profoundly retarded. Paper delivered at the 91st annual convention of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 4 p., Mimeographed.

Woodbridge State School, an institution serving 1,000 severely and profoundly MR children and adults, has used funds provided by the Title I program to increase staff members and teaching positions, purchase equipment, inaugurate training programs, and establish additional physical facilities. The orientation of this institution is educational, and the curriculum goal is to help residents become productive citizens of the institutional community. Classroom instruction is designed to teach both academic and self-help skills. The school maintains recreation, cottage education, occupational therapy, and playroom programs. New additions to the school include a library, an audio-visual center, and a transportation unit. It is estimated that the funds provided by Title I over an 18-month period have permitted the school to make progress that otherwise would have taken at least 20 years. (No refs.) - *J. K. Wyatt.*

Woodbridge State School
Woodbridge, New Jersey 07095

1476 MOORMAN, C. The Training Centre: VI. A social education centre. *Journal of Mental Subnormality*, 13(25):88-92, 1967.

The establishment of a Social Education Center within an MR institution resulted in increased social skills, participation in a

wider variety of social situations, and favorable behavior changes for the 8 boys and 4 girls (CA, 9-16 yrs; IQ, 42-70) who participated in the experimental program. Their average length of time spent in the institution was 6 years. The purpose of the Center was to simulate as nearly as possible the environment of a normal home. Initial observations of Ss identified personality difficulties and social skill deficits. Ss were unable to cooperate with each other, were irresponsible with property, and were incapable of initiating constructive activities. They had few social skills and about half of them were withdrawn. Center activity emphasized purposeful work projects designed to help each S overcome his difficulties and add to feelings of competency. The program included home maintenance training, academic work, budgeting, trips outside the institution, and self-improvement training. The final goal of the experiment is to enable the Ss to participate in normal community living. (No refs.) - *J. K. Wyatt.*

Social Education Centre,
Lea Castle Hospital
Kidderminster, England

1477 SCHAEFFER, M. HARRIS. An on-ward multi-approach to sensory handicaps. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 4 p. Mimeographed.

Through a Hospital Improvement Program, 86 (38 female; 48 male) severely or profoundly retarded patients were included in a program for the melioration of sensory handicaps. To gain the maximum therapeutic value with the smallest loss of time and effort, the service therapies were located as near the ward living quarters as possible. An interdisciplinary approach was used to integrate and focus all activities toward the development of all skills. Therapies seldom used with the severely and profoundly MR have helped to bring about positive attitudes of behavior and to increase social interaction. (No refs.) - *E. F. MacGregor.*

Pennhurst State School
and Hospital
Spring City, Pennsylvania 19475

1478 ADAMS, ARDIS, DOOLAN, EDWARD, SPEAR, BEULAH, & ESTLICK, WILLIAM. Preplacement group training program. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 11p. Mimeographed.

A Hospital Improvement Program grant made possible an accelerated program designed to improve the preparation of residents for placement in the community. Two pre-placement cottages were established - one for each sex. The program includes training in money concepts, good grooming, conduct, leisure time, and responsibilities. Community activities include shopping and attendance at church, dances, and sports events. The program has resulted in an increased placement rate (approximately double) and a decreased return rate (about half). (No refs.) - *E. F. MacGregor.*

Southbury Training School
Southbury, Connecticut 06488

1479 TOWNSEND, PETER W. The institution looks outward: A residential school's role in community planning for the retarded. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967.

The Development Evaluation Center (DEC) of the Central Wisconsin Colony and Training School, Madison, Wisconsin, was established in 1963 to provide comprehensive, interdisciplinary outpatient, and short-term inpatient diagnostic evaluation services for noninstitutionalized MRs on a state-wide basis. Staff resources available to the DEC include its own 17-member staff, the regular in-patient hospital staff, and outside specialists who serve as consultants. In addition to working with MRs and their families, the DEC provides consultation and planning services for other agencies in order to help them develop skill, knowledge, and facility in providing for the MR. This service will increase the number of professional workers in the MR field and will provide more support for MR programs. (No refs.) - *J. K. Wyatt.*

Central Wisconsin Colony
and Training School
Madison, Wisconsin 53704

1480 BARNES, ESTELLE. Activities for the severely retarded. *LTS&H Observer*, Newsletter of the Lynchburg Training School and Hospital, Colony, Virginia, 25(Spring-Summer):1-4, 1967.

Since 1966 the Nursing Service of the Lynchburg Training School and Hospital has been

conducting a program of motivational exercises for those SMR who are unable to attend the regular school program. Currently there are 4 groups of 8 to 10 patients. The groups meet twice a week for a 30 to 45-minute activity session supervised by a nurse and an attendant. Initially they learned to sit in a circle and to catch, return, and bounce a ball. The patients are now learning to march in time to band music and rhythm instruments, to sing along with recorded music, and to answer roll call. As a result of these exercises, their personal appearance, posture, and coordination have improved. Future program goals include: further improving their rhythm, coordination, and posture; teaching word meaning; expanding their interest and attention span; encouraging them to be more independent; and developing each patient to his fullest potential. (No refs.) - *J. Melton.*

Lynchburg Training School
and Hospital
Colony, Virginia

1481 LESLIE, E. A., & RITCHIE, J. B. Training of the subnormal patient - 2. *Nursing Mirror*, 122(11):vi,xvi, 1966.

A program involving change of environment, promotion of physical well-being and social rehabilitation, and development of potential abilities was initiated by the staff of the Ladysbridge Hospital in order to provide better and more efficient services for severely deteriorated patients. There are 5 nurses, 1 male charge nurse, 2 male and 2 female student nurses directing the program. Patients come from the negative, psychotic, unemployed, and disordered element of the general population. They take low or high grade classes with music and movement, play activity, handicraft, and organized team games. Case studies are listed to show an overall 15 percent increase in improvement of personality and potential after 6 months in the program. Many of those who were previously destructive and unmanageable have become controllable as a result of going through the program. It is not known whether patients' abilities were hidden or overlaid by continuous lack of attention or by institutional neurosis. (No refs.) - *J. Melton.*

Ladysbridge Hospital
Banff, England

1482 KOKASKA, CHARLES J. What if they could write? *Training School Bulletin*, 64(3):92-94, 1967.

A member of an MR institution is not able to communicate to the world vivid impressions of his thoughts and feelings that would arouse the public to come to his support. In order to obtain support for those who are institutionalized it becomes necessary for those who work in such a setting to maintain a constant awareness of the basic needs and feelings of those they serve. (No refs.) - *M. L. Shelley.*

Special Education Department
Eastern Michigan University
Ypsilanti, Michigan 48197

1483 SUGAYA, KATSUHIKO. Survey of the enureses problem in an institution for the mentally retarded with emphasis on the clinical psychological aspects. *Japanese Journal of Child Psychiatry*, 8(2):142-150,

SUGAYA, KATSUHIKO. Survey of the enureses problem in an institution for the mentally retarded with emphasis on the clinical psychological aspects. *Japanese Journal of Child Psychiatry*, 8(2):142-150, 1967.

A survey of 67 institutionalized MR children revealed that 48 had suffered from enuresis. Investigation of the psychological environment revealed that (1) frequent personnel changes resulted in emotional disturbances and increased enuresis, (2) attentions which focused on curing the enuresis caused an increase in the problem, (3) mental tension when maintained at high levels (as special interest and participation in an approaching sports day) decreased the enuresis. (4 refs.) - *A. Huffer.*

Hokkaido Obihiro Child
Guidance Clinic
Hokkaido, Japan

1484 CLELAND, CHARLES C., SEITZ, SUE, & PATTON, WILLIAM F. Birth-order and ruralism as potential determinants of attendant tenure. *American Journal of Mental Deficiency*, 72(3):428-434, 1967.

An analysis of attendant tenure trends at Austin State School, Austin, Texas, revealed

that personnel of rural background had significantly longer tenure ($p < .0005$) than urbanites and offered partial, but not significant support, for the hypothesis that first-born night duty attendants would have a shorter tenure than later-born night duty attendants. Analysis of the total sample in terms of cottage and nursing personnel and inclusion of those employed on all shifts indicated that later-born cottage attendants had a significantly higher tenure mean ($p < .01$) than first-borns. The Attendant Information Form was used to elicit demographic data from 365 attendants (282 females, 83 males), 230 of whom were employed in cottage-life situations and 135 of whom were in nursing-service areas. The first-born, later-born hypothesis was based on theory concerned with the influence of birth order on ability to adjust to conditions of social isolation. Other variables significantly affecting length of service were the size of the attendant's family (number of siblings) and prior assignment to relief duty. Mean tenure for night-shift Ss from families with more than 4 siblings was significantly longer. Attendants who had not been assigned to relief duty reflected longer tenure than those who had. Sex differences were not significant. No relationship was found between tenure and moonlighting, school attendance, and job preference. (19 refs.) - *J. K. Wyatt.*

Department of Special
Education
2410 San Antonio
Austin, Texas 78705

1485 GILMORE, ALDEN S., & RICH, THOMAS A. *Mental Retardation: A Programmed Manual for Volunteer Workers.* Springfield, Illinois, Charles C. Thomas, 1967, 138 p. $5.75

This book is designed as a basic programmed text for volunteer workers in the field of MR. It contains basic information which will aid them in preparing to work with the retarded. It does not train the individual for a particular task or a specific job, but rather it provides a good foundation for formulating favorable attitudes toward the retardate. Anyone in the area of MR who is using or intends to use volunteer workers will find this manual extremely helpful in orienting and training this group. (27-item bibliog.) - *A. Clevenger.*

CONTENTS: Programmed Instruction; Mental Retardation, an Introduction; Education; Behavior; Physical Ability; Recreation; Family Relations; Brain Damage; Speech and Hearing; Health; Rehabilitation.

1486 BETTE, MARIANNE. Summer work with the retarded. *American Journal of Nursing*, 67(6):1228-1229, 1967.

Shock, disbelief, and depression were attitudes felt by a high school student working during the summer months with retardates at the Southbury Training School in a program sponsored by the Student Work Experience and Training Program (SWEAT). Assignment was made to a cottage of SMR and profoundly MR patients who had to be fed, changed, bathed, and dressed. Experience was also gained working in the hospital, clinic, and with hyperactive males. Time was set aside for personal discussions with the professional staff as well as classes dealing with types of MR, child care, and employment opportunities of the MR. Summer work of this sort is recommended for high school or college students who desire to enter any of the professions dealing with the improvement of human welfare. (No refs.) - *J. Melton.*

School of Nursing
Loyola University
Chicago, Illinois

Religion

1487 EGUIA, JOSÉ I. Aide spirituelle. (Spiritual welfare.) In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, p. 77-85.

Spiritual aid is very helpful in alleviating the stress of families with MR members. It allows a more favorable reaction to inner conflict and gives some meaning to the family situation. Faith, church, and the spiritual leader play an important role in re-establishing family stability. (No refs.) - *B. Bradley.*

PROGRAMS AND SERVICES

Planning and Legislation

1488 The George Washington University Institute of Law, Psychiatry and Criminology. *Institutionalization of the Mentally Retarded.* Newman, Roger W., ed. New York, New York, National Association for Retarded Children, 1967, 200 p. (Price unknown).

This monograph presents the statutory enactments of all states and the District of Columbia concerning public institutions, their establishment and operation for the care, training, and treatment of MRs. The data are an outgrowth of a larger project studying the operation of legal and administrative practices affecting all institutionalized individuals. The summary of legal provisions (through 1966) governing residential care for the MR is limited to statutes and administrative regulations affecting legal procedures by which MR persons can be institutionalized and the legal rights of these persons. Material is presented in 3 major areas: terminology and definitions used for the purpose of institutionalization, voluntary and involuntary procedures, and protections and rights of MRs. Some of the data is illustrated by a series of schematic charts which divide these main factors into significant components within the statutes. Although the statutes of all 50 states contain provisions for the regulation of the institutionalization of MR persons, statutes protecting the individual rights of the retardate exist only in the minority. While there are no specific references, extensive footnotes for most of the material provide full documentation sources; thus, this manual is an excellent source of material on state laws affecting admissions of the MR to institutions. (No refs.) - *B. Bradley.*

CONTENTS: Introduction; Terminology and Definitions; Institutionalization Procedures; Protections and Rights of Institutionalized Patients.

1489 CASE, FRED M. Legislation in review. *Motive*, 13(4):7-10, 1967.

Bills passed in the 107th General Assembly (Ohio) authorized: pay increases and improved classifications so that Ohio can compete for professional personnel in the field of MR; additional funds for the Department of Mental Hygiene and Correction; and a shifting of responsibility to the communities for provision of funds, development and administration of programs, and acquisition and maintenance of facilities for the mentally ill and the MR. The Community Services Act (HB 648) provides for a Mental Health and Mental Retardation Board in each county to make recommendations for needed services and facilities. Another bill (SB 169) establishes a County Board of Mental Retardation which will be responsible for training programs for MR children and adults. (No refs.) - *E. F. MacGregor.*

No address

1490 FRAZEE, VERNON. Implementation of House Bill 1407. In: Illinois. Mental Health Department. *Community Day Centers for the Mentally Retarded in Illinois.* (Proceedings of the third annual meeting of executive directors.) Springfield, Illinois, 1966, p. 20-30.

Since the passage of House Bill 1407, county committees have been appointed and the State Advisory Council has met 3 times to consider county guidelines, teacher training programs, traineeships and fellowships, roles of state departments with handicapped children, classroom shortages, TMR-EMR differences, the role of the school social worker, and future planning. Events leading to the development and passage of the bill included classification standards, development of high school MR policies, distribution of the Rules and Regulations, decreasing paper work, and passage of bills which provided for funding of special educators and community mental health facilities and for mandatory special education for EMR children. In 1964 a position paper of the Office of the Superintendent of Public Instruction stated that legislation should include service to all handicapped children, require specific special education facilities, provide transitions from permissive to mandatory laws, emphasize local control, make procedures available to school officials and citizens, provide training for partially trained teachers, emphasize incentives in enforcement, and plan adequate supply and administrative structure. Groups

and individuals commented on the statement, and the consensus evolved Bill 1407. Important features include: county and state advisory boards, funds for key services, high school MR programs, and mandatory special education for the handicapped as of 1969. (No refs.) - *R. D. Perkins.*

1491 MOSS, DONALD H. House Bill 1407 and its relationship to projected program planning. In: Illinois. Mental Health Department. *Community Day Centers for the Mentally Retarded in Illinois.* (Proceedings of the third annual meeting of executive directors.) Springfield, Illinois, 1966, p. 31-39.

The Mandatory Special Education bill is historically the most profound in Illinois; implementation is now the big question. Public schools must now serve EMRs and TMRs; previously only 25 percent were served under the permissive law. Communities must be made aware of this new law. Problems will be different in 1969 when the Bill is in full effect. Additional services, particularly medical, vocational and recreational services will be added. Private programs must shift to other MR services. MR programs can begin at age 3. Vocational opportunities are needed by older MRs. Schools and private centers must cooperate to provide comprehensive services, and since caseloads will increase immensely, planning should begin now. (No refs.) - *R. D. Perkins.*

1492 Arkansas. State Health Department. *Mental Retardation in Arkansas.* Little Rock, Arkansas, 1966, 136 p.

A 10-month study of the MR needs of the state of Arkansas surveyed the demographic characteristics of: (1) persons receiving the services of agencies for MR youth; (2) the waiting lists of Arkansas Children's Colony, Arkansas Child Development Center, and Arkansas State Hospital; and (3) adult patients and adults on the waiting lists of the Arkansas State Hospital. The distribution and social situation of former residents of the Children's Colony and the social characteristics and present standing of MR students attending Special Education classes at a Little Rock junior high school were also investigated. Over 50 percent of the MR youth surveyed in 1964 by the Child Development Center and by the Children's Colony were from urban areas. The Child Development Center, whose patients range in age from 6 to 12 years, had a higher proportion of males than the Children's Colony, which serves an age range of 13-20 years. The Arkansas State Hospital had 127 patients under age 24; 15 of these were under 18. There were considerably more children than adults on waiting lists. However, critical unmet needs for services existed for both groups. Seventy percent of waiting-list parents returning questionnaires indicated they still desired the services of the Children's Colony for adult MRs; they also pointed out a need for more personalized and intensive admission programs, continuing communication between agency and client, and after-care programs. Public school special education classes appeared to serve a unique group of MRs whose needs were not duplicated by MRs in residential institutions. (7-item bibliog.) - *J. K. Wyatt.*

1493 KOTT, MAURICE G. Meeting retardation needs. *Welfare Reporter*, 17(1):4-18, 1967.

New Jersey's Comprehensive Plan to Combat Mental Retardation includes 7 State Residential treatment and care centers which provide a variety of programs for institutionalized MRs. These centers are administered by the Department of Institutions and Agencies. The entrance age for 6 institutions is 5 years. One facility has a nursery unit which provides care for children under 5. Two institutions are exclusively for females, 2 for males, and 3 (built since 1955) are for both sexes. Individual institution programs vary and cover a wide range of areas, but all programs are aimed at enabling each MR to reach his highest level of development. Training programs include self-help and care, vocational training, on-the-job training, recreation, and community placement. One institution is programed exclusively for (1) training EMR adolescents to assume adult responsibilities which will enable their return to the community, and (2) preparing professional and research personnel in the MR field. This facility also provides training for EMR adolescents who have additional physical handicaps. (No refs.) - *J. K. Wyatt.*

Division of Mental Retardation
Department of Institutions and Agencies
Trenton, New Jersey

1494 SLOAN, WILLIAM. Trends in state mental retardation planning. In: Illinois. Mental Health Department. *Community Day Centers for the Mentally Retarded in Illinois.* (Proceedings of the third annual meeting of executive directors.) Springfield, Illinois, 1966, p. 65-71.

Trends in current state MR planning are related directly to the historical development of services for MRs. Fifty years ago "feebleminded" persons, who were considered hereditary incurables, were segregated from society and confined indiscriminately under state care. After World War I, the mental testing movement revealed differences among MRs in behavior. Public schools began to develop special classes and other services began to appear in a fragmentary manner. Only in the last 15 years has "the unitary nature of the child" come to be recognized. An MR is primarily a person, not an IQ. Since needs change, programs must be flexible. From birth to death, the child will require some kind of service. His needs should be met by decentralized planning and by broad programs available near home. In Illinois each subzone can develop programs according to its particular need. The state is the "pump-primer," a planning resource and partner to local agencies. Close inter-agency ties are vital. (No refs.) - *R. D. Perkins.*

Community Programs

1495 MEYEN, EDWARD L., ed. *Planning Community Services for the Mentally Retarded.* Scranton, Pennsylvania, International Textbook, 1967, 394 p.

Thirty-five selected readings (all but 7 published since 1962) on community services for the MR are presented in terms of 5 general areas: basic planning guidelines, diagnostic services, rehabilitation services, day care services, and residential programs. Each of these areas is introduced with brief discussion from an educational perspective and is followed by hypothetical situation-type problems designed to encourage the educator to explore the problems related to his role in developing community services. The readings define and describe the major facilities and services needed in the provision of a complete continuum of care for the MR. Although the book was designed as a supplemental text for courses in MR, special education administration, vocational rehabilitation, and social work, it will also serve as a reference source for courses in public health services, sociology, and psychology. It is also a meaningful resource for individuals and groups involved in planning community services. (73 refs.; 127-item bibliog.) - *A. Huffer.*

1496 CORTAZZO, ARNOLD D. A guide to establishing an activity program for mentally retarded adults. In: Meyen, Edward L., ed. *Planning Community Services for the Mentally Retarded*, Scranton, Pennsylvania, International Textbook, 1967, p. 243-270.

The establishment of comprehensive and specialized activity programs for retarded individuals who are beyond school age is discussed. Based on a philosophy of self-realization, these programs should help the MR to develop socially acceptable patterns for daily living and to make the important transition into adult living, should prepare them for more advanced programs, and should provide them with an alternative to institutional living. Staff members will work closely with parents in achieving program objectives. Suggestions are offered with regard to establishing a planning committee; determining program needs; actually carrying out the plan; establishing qualifications and duties for personnel; and determining budget and finance procedures, admission criteria, and the program's responsibility to ineligible applicants. (No refs.) - *C. A. Pepper.*

1497 MURPHY, WILLIAM K. A grant-in-aid program for community day centers. *Mental Retardation* (AAMD), 5(6):4-6, 1967.

On July 1, 1963 a grant-in-aid program for community day centers for the MR was instituted by the State of Illinois; the Department of Mental Health, Division of Mental Retardation Services, is responsible for administration of funds (which supplement local funds and cannot exceed 1/2 the operating cost of the center), and applications are screened by a Citizens Advisory Committee. Agencies applying for a grant must provide

day-service for applied training in self-help, social, recreational, and work needs for MR of all ages (except those eligible for public school); must be nonprofit agencies licensed by an appropriate state agency; and must accept persons regardless of race, color, or religion. Each agency must have a board of directors (for a voluntary agency) or an advisory committee (for a governmental agency) consisting of at least 9 persons; this group will represent the community, will determine policies, and will delegate administrative authority to a program director. A social worker and psychologist must be utilized at least part time, and those on the training staff must have a high school education and participate in on-the-job training, inservice training, and/or more formal education. Centers must operate 5 hours a day at least 5 days a week and must have a written statement of admission and dismissal policies and procedures. Hopefully the awarding of grants will help improve the quality of programs and services for MR by fostering better utilization of consultant services. (No refs.) - *G. M. Nunn.*

Illinois Department of
Mental Health
Springfield, Illinois

1498 Illinois. Mental Health Department. *Community Day Centers for the Mentally Retarded in Illinois.* (Proceedings of the third annual meeting of executive directors.) Springfield, Illinois, 1966, 84 p.

This report provides general information about community day centers for MRs, particularly regarding the impact which the new mandatory special education act (House Bill 1407) will have on these centers. The report may be of interest to groups and agencies concerned with day centers and/or MR legislation. Mandatory special education (House Bill 1407) represents a profound change in educational practice. Community committees have been appointed and the State Advisory Council has met to discuss key plans and problems. But community support must be organized and maintained to further implement the program. Advisory boards are responsible for formulating the policies determining services and the executive director for administering the services. A good policy should minimize conflicts between agency and employees and should be reviewed often. Teaching principles derived from Piaget's theory are recommended as beneficial in nursery school programs for TMRs. Operant principles, particularly a functional motive system, and programed instructional materials seem to be effective in EMR academic education. (32 refs.) - *R. D. Perkins.*

CONTENTS: Nursery School Experiences for the Trainable Mentally Retarded (Scheerenberger); Implementation of House Bill 1407 (Frazee); House Bill 1407 and Its Relationship to Projected Program Planning (Moss); The Development of and Need for Personnel Policies (Ludwig); The Relationship of the Executive Director to the Board of Directors (Karlson); Community Organization (Olsen); Trends in State Mental Retardation Planning (Sloan); Research in the Application of Modern Behavior Theory to the Education and Training of the Retarded (Bijou).

1499 LUDWIG, FRED A. The development of and need for personnel policies. In: Illinois. Mental Health Department. *Community Day Centers for the Mentally Retarded in Illinois.* (Proceedings of the third annual meeting of executive directors.) Springfield, Illinois, 1966, p. 41-46.

All organizations need written rules and regulations to inform each employee of his rights and obligations. Advantages of an official policy statement include: workers know what is expected of them, they are assured equality of treatment and security, and executive judgments are minimized. Policies are formulated in terms of what the executive considers significant; then a comparison is made with the present written and unwritten practices by securing employee suggestions, by considering comparable models, and by consulting professional sources. Duties of a personnel committee include helping to: secure and retain the staff, review policies, evaluate fringe benefits, develop salary schedules, and develop job descriptions. Policies must be reviewed and adjusted often. (No refs.) - *R. D. Perkins.*

1500 KARLSON, ADELE. The relationship of the executive director to the board of directors. In: Illinois. Mental Health Department. *Community Day Centers for the Mentally Retarded in Illinois.* (Proceedings of the third annual meeting of executive directors.) Springfield, Illinois, 1966, p. 48-54.

Since 1963 associations and day centers for the MR in Illinois have been under the guidance and management of executive directors

whose role it is to administer the agency's services and to help the board of directors with its duties. The director is responsible to local agency boards in which the public is expected to play a large part. The board provides collective wisdom and is a powerful link to the community. Its main responsibility is to formulate and establish official policy. The board is also responsible for selecting the director to carry out that policy. The board chairman and the director provide leadership for the board. A yearly review of responsibilities should be made. The obligations of the director are to: administer the agency, recommend policy, manage the budget, provide long-range planning, recommend assignments and operate procedures, keep the board informed, and orient new board and staff members. Obligations of the board include selecting a competent executive director, making policy, handling business affairs, providing personnel, approving assignments and budgets, adopting rules to guide the board and staff, informing the director of community reactions and supporting him. (2 refs.) - *R. D. Perkins.*

1501 OLSEN, ARTHUR J. Community Organization. In: Illinois. Mental Health Department. *Community Day Centers for the Mentally Retarded in Illinois.* (Proceedings of the third annual meeting of executive directors.) Springfield, Illinois, 1966, p. 55-64.

Community organization is defined as "the engagement of community citizens to 'planfully' mobilize the existing resources to meet a present or projected unmet need." It is a vibrant way to work with people to accomplish a balance between needs and resources. Historically, community organization began in London in 1869, then moved to American city ghettos. Settlement houses gathered neighborhood people together to work out mutual problems. After the Depression, schools of social work introduced community organization curricula. Movements that have utilized community organization include poliomyelitis, civil rights, and retardation. Since selling is a key part of community organization, the worker must be concerned about how he sells. Other basic factors are a cause, personal engagement, and a progression to the end. Community organization can be accomplished by finding a cause, knowing the community power structures and the population needing services, taking proposals to the appropriate leaders, and keeping rapport with the public. Promotion of the cause can be accomplished by securing the support of local and allied agencies, planning boards and political parties and by giving credit where it is due. (No refs.) - *R. D. Perkins.*

1502 DONZELLA, MICHAEL A. A community day center serving the needs of the mentally retarded. *Mental Retardation in Illinois*, 1(4):47-48, 1967.

The Shore School and Training Center (STC) believes that "a comprehensive approach to day program services can do much to assist the retarded in their development and adjustment and, at the same time, alleviate many of the problems confronting parents." Case finding is one of the major features of its programs. In order to provide supportive assistance through a public health nurse or case worker, the STC maintains an active relationship with a variety of agencies in the Evanston and Chicago areas. Any child referred to STC receives a complete psychological evaluation while his parents are interviewed by the case worker. Since it is important to deal with children's disabilities at an early age, the STC provides a preschool program for children between 3 and 5 years of age. The center also provides 2 programs for school-age children who are referred by other agencies. The Primary I program is maintained for those youngsters of CA 6 to 9 who eventually can qualify for public school programs for the TMR. The Primary II program is provided for MRs between the ages of 9 and 16 years who have multiple handicaps and whose prior growth and progress have been very limited. An intermediate program for pre-adults between the ages of 15 and 21 years concentrates on skills needed for placement in the Vocational Adjustment Center (VAC). (No refs.) - *C. M. N. Mehrotra.*

Executive Director
Shore School and Training Center
Evanston, Illinois

1503 CONOVER, JOHN V. Community day care program for severely and profoundly retarded children. *Welfare Reporter*, 17(1): 19-25, 1967.

Since 1963 the New Jersey Association for Retarded Children and the Division of Mental Retardation have operated day care programs for the purpose of providing care, training, and social adjustment for SMR and profoundly MR children. Eligibility criteria for the program include: the degree of MR must be

severe enough to exclude the child from public school classes, the child must be between the ages of 4½ and 21 years, and the child must have both physical and psychological examinations. As of 1967 there were 24 day care centers located in 21 counties. These centers serve 278 children. A recent increase in the operating budget will allow for the care of an additional 100 children and will enable the centers for the first time to provide transportation. Program emphasis is on the development of coordination and social stimulation. Training procedures have been successful with children previously considered to be completely dependent. Children have developed speech, learned to walk, and acquired bladder and bowel control. Some children have been able to attend EMR or TMR public school classes after participation in the program. Present plans call for the expansion of the program, for the gradual assumption of total operating responsibility by the Division of Mental Retardation, and for the addition of a health and activities program designed to supply services for adult MRs not eligible for this program. (No refs.) - *J. K. Wyatt.*

Bureau of Day Care and
Training Services
Division of Mental Retardation
Trenton, New Jersey

1504 HUTCHISON, ALEXANDER. *Special Care Units for the Severely Subnormal.* Brussels, Belgium, International League of Societies for the mentally Handicapped, 1967, 14 p. (Price unknown).

The type of facilities, their administration, and costs involved in operating special day care units for the severely subnormal child are described. These units are designed for the severely subnormal, those Ss requiring a considerable degree of nursing care, and having an IQ<19. In general, the number of special care centers should be 1/3,000 population. The special care units should be purpose-built with all the rooms on the ground floor, sufficient space per child, and not more than 10 persons per room. Transportation should be furnished daily. Staffing should include a medical officer, nurse, domestic staff, matron, and attendant staff (1 attendant to every 3 or 4 places). Habit and social training are of primary importance in the daily routine. Cooperation with other agencies is essential. The Galen House, a special care unit in England, serves both sexes and all age groups; it accommodates about 50-60. The management of this center is controlled by the Senior Medical Officer from the City Health Department. The program includes habit and social training and parent counseling. Although the cost of these centers exceeds the cost of full-time care at home or in the hospital, it is felt to be beneficial because the family, the retardate, and the community profit. (3-item bibliog.) - *B. Bradley.*

1505 YODER, FRANKLIN D. Services of local health departments. *Mental Retardation in Illinois*, 1(4):49-50, 1967.

"The primary function of the Illinois Department of Public Health is to strive for positive health for all people in the state." This objective is achieved with the assistance of 33 local (county, city, and district) health departments (LHDs) and 23 county health departments. Preventable disease control is an important area of concern for the LHDs. The state department is very active in preventing and locating cases of MR. In order to encourage activities for prevention of MR it provides technical assistance, financial aid, and consultation to LHDs. It also works to extend local resources for the care of the retarded. Private residential facilities for the MR are given aid in the development of services including nursing care, nutrition, and social activities. LHDs provide nurses who aid in preventing communicable disease, visit homes of retarded children upon request by parents, and assist parents in meeting the child's health needs, day-to-day care and nurture, and in training the child in self-help skills. The LHDs also provide health education services for their communities. In order to assure better health for all citizens, health departments and additional services must be established by local health departments. (No refs.) - *C. M. N. Mehrotra.*

No address

1506 HEINEN, BERT. Achtung vor dem Leben. (Respect for life.) In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, p. 49-61.

The importance of human rights of the MR is stressed in terms of dignity and a right to live a full life in society. Those denying

the rights of the MR through the use of euthanasia in reality are urging a type of homicide. The "right to live" includes the freedom of the retardates to develop all their faculties and to receive protection within society. The family is the primary source in satisfying the retardate's needs, but the family unit should receive professional assistance, official aid, agency support, public cooperation, and legal tutelary assistance. The MR should be diagnosed as soon as possible, and continuous support should be provided to enable him to be integrated into society as much as possible. This integration can take place in the context of the community or residential care, which is required only when family strength is inadequate and the MR person cannot survive alone in society. Regardless of his placement, the MR's recreational and religious life should receive attention and consideration. In addition, he should be enabled to enjoy a protected and defined employment program even in periods of economic crisis. (No refs.) - *B. Bradley.*

1507 SCHWARTZ, ARTHUR L. Developing community group work services: The learnings from a NIMH project. Paper presented at the 91st annual meeting of the American Association on Mental Deficiency, Denver, Colorado, May 15-20, 1967, 7 p., Mimeographed.

The New York City Chapter of the Association for the Help of Retarded Children (AHRC) inaugurated a demonstration program to show: (1) that the retarded can be included in the services offered by community group work agencies; (2) that special training for existing staff is not necessary; and (3) that group work concepts used for normal children are, in great measure, valid for use with the retarded. The AHRC staff worked closely with agency staffs in establishing programs, making field visits, helping with problems and questions, developing training material, distributing information, discussing areas of concern at meetings of project and agency staff members, and providing some financial assistance. After the project terminated 10 of the 12 participating agencies continued their programs, and 7 new group service agencies started programs for the retarded. Several agencies have either started day-camp programs for the MR or included them in the day-camp activities for normal children. (No refs.) - *E. F. MacGregor.*

No address

1508 HALL, LILLY C. The first year at Balvicar Centre, Glasgow. *Developmental Medicine and Child Neurology*, 10(1): 121-128, 1968.

The Balvicar Child Development Center, which was established to evaluate and treat various types of medical, social, and emotional disabilities of children (up to 5 years of age) and to give counsel and support to their parents, served 113 patients in the first 13 months. The part-time staff of medical officer, a health visitor, and a secretary cooperate with the Education Health Services and consultant specialists from the Regional Hospital Board. The Center has an audiology unit, facilities for play therapy, and a special day nursery. Early detection and corrective therapy, made possible by the teamwork of visiting specialists, aid in helping each child reach his fullest potential. Parents receive support in adjusting to the problem of having a handicapped child and practical assistance for his everyday care and training from the parents group, the health visitor, and the staff. By emphasizing early diagnosis, immediate treatment, close supervision, and parental guidance, the center intends: to reduce the original disability, to eliminate the development of secondary disabilities, to avoid missing opportunities for therapeutic or social education, and minimize the damage to social orientation. (4 refs.) - E. F. MacGregor.

Balvicar Centre
46 Balvicar Street
Glasgow S. 2., Scotland

1509 HAREMSKI, ROMAN L. The role of the department of children and family services in serving the retarded child. *Mental Retardation in Illinois*, 1(3):33-34,1967.

The Department of Children and Family Services offers family-centered services, including a comprehensive evaluation of the family situation, and counseling, which are essential in formulating constructive plans for the family as well as the retardate. Short-term agency involvement is emphasized, and no services can be provided apart from an overall approach to the needs of the entire family. Services are also provided for the dependent retardate (wards of the agency). Retardation is significant only in terms of determining the most appropriate placement for a given child. In all cases, the extent of payment by the parents is determined by

their ability to pay for the services provided. The department also sets the standards for, and is responsible for the licensing of, private day care and residential facilities in the state. (No refs.) - *E. R. Bozymski.*

528 South Fifth Street
Springfield, Illinois 62706

1510 MESSNER, SHERWOOD A. Coordinated services for the handicapped. *Rehabilitation Record*, 8(6):13-15, 1967.

Voluntary community agencies for the handicapped can and should provide integration of services in the areas of rehabilitation referral, follow-up, research, and placement of patients as well as training of personnel, and should also decentralize their services to make them accessible to more patients. Various necessary services currently are provided by different agencies with little communication between them. Such practices result in less than optimum benefits to the handicapped individual. Furthermore, age limitations on the patient's eligiblity for services, particularly from state agencies, excludes many individuals at a vital time in their lives. Voluntary agencies can and should fill this need. New programs for the handicapped should be encouraged to merge into established community facilities rather than spend federal monies exclusively on the building of new and separate facilities. Training of sub-professional personnel to handle non-specialized tasks will enable many professional personnel to devote more time to actual rehabilitation services. Lastly, funds should not always be used exclusively to finance new approaches to problems, but should encourage existing methods, especially when they have proven adequate. (3 refs.) - *E. Gaer.*

UCP Association, Inc.
321 West 44th Street
New York, New York 10036

1511 Great Britain: Minister of Health. *Health & Welfare: The Development of Community Care.* New York, New York, British Information Service, 1966, 422 p. $7.50.

Revised health and welfare plans of the Local Authorities in England and Wales for the decade 1966-1976 are presented with annual forecasts to 1971 and a single forecast for the second 5-year period. Detailed statistical data are given on facilities, population, staff ratios, finances, and areas of responsibility. Coordination of services, systematic development, and standardization of data are recommended for this type of planning. The scope of health and welfare plans includes preventive measures as well as residential care. Statistical data are presented on domiciliary staff, ambulance service, centers and clinics, residential accommodations, and expenditures. Population trends are considered a major factor in planning for community health and welfare services. The number of places in hostels for subnormal adults is planned to increase from 1,446 in March, 1965 to 8,854 in 1976, but this will still be below the number needed. In 1965 there were 900 places in Local Authority hostels for subnormal children, and this is planned to increase to 2,706 in 1976. The number of residential accommodations needed for subnormal children varies according to geographical area. In 1965 there were 162 social centers and clubs for the subnormal being operated by Local Authorities. Although the number of training centers is expected to increase from 18,770 in 1965 to 28,493 in 1976, it, again, does not meet the full need - especially for adult training centers. A 58 percent growth in revenue expenditures is projected between 1965-66 and 1975-76. (No refs.) - *B. Bradley.*

CONTENTS: Purpose of Plans; Scope of Plans; Implementing the Plans; The Revised Plans; Conclusion; Appendix A - Summaries of Premises, Places, Staff and Capital Expenditure in Local Authorities' Plans; Appendix B - National Summary.

1512 Program Area Committee on Child Health of the American Public Health Association. *Services for Children with Cerebral Palsy: A Guide for Public Health Personnel.* New York, New York, American Public Health Association, 1967, 115 p.

Voluntary and official agencies, and planning groups with responsibility for determining the extent, coverage, content, and operation of community services for cerebral palsied (CP) children need to be aware of the effects of CP on the individual child, his family and his community; of the special needs of CP children; and of practical ways that community resources and services can be organized to plan for these children and their families. After CP children have been

identified, comprehensive diagnostic services that include medical, speech and hearing, psychological, social, educational, and vocational evaluations should be made available in order to plan for their care. Some of the special services a community may need to provide include in-patient hospital services, outpatient clinical services, daytime education, home care, long-term institutional care, and vocational rehabilitation. Community programs should be developed to meet specific community needs. Evaluation procedures and program study should be used to determine the effectiveness of existing programs and to identify areas where adjustment is needed. (No refs.) - *J. K. Wyatt.*

CONTENTS: Concepts and Facts About CP; Causes and Prevention of CP; Case Finding; Comprehensive Diagnosis and Planning for Care; Treatment and Guidance; Special Services and Facilities; Organization of Community Resources; Program Study and Evaluation; Research.

1513 Greenleigh Associates. An Evaluation of the Foster Grandparent Program. New York, New York, 1966, 89 p.

The Foster Grandparent Program (FGP), which utilizes older people to provide individual care and attention for institutionalized children, is an effective instrument in reducing poverty among the aged poor and in providing a useful and needed role for older people. The program has a dual function and orientation: employment of the aged and service to children. The FGP operates in general and special hospitals and in institutions for the MR, the emotionally disturbed, and dependent and neglected children. The general approach at most of the institutions for the MR is to use foster grandparents to help the MR achieve some degree of increased responsiveness, functioning, and socialization. In this evaluation of the effectiveness of the FGP data were collected from 10 projects by site observations, interviews, questionnaires, and analysis of primary and secondary resource material and documents. The study included 478 older persons and 907 children. Results showed that the program has had a major impact on the behavior, health, and functioning of the children (74 percent of the MR children showed improvement); that the presence of the foster grandparent can facilitate the adjustment of the child to the institutional setting; and that the program is more successful with younger (chronologically or mentally) children than with teen-age youth, especially the emotionally disturbed. (No refs.) - *C. M. N. Mehrotra.*

CONTENTS: Introduction; Summary of Major Findings, Conclusions and Recommendations; Background of the Foster Grandparent Program; The Foster Grandparents: Characteristics and Impact; The Children: Characteristics and Impact; Children's Institutions; Viability and Impact of the Foster Grandparent Role; Program Administration and Operations; Viability of the Program at the Community Level.

1514 ZDANOWICZ, DONALD E. The development the Field Services program. *Welfare Reporter*, 17(1):26-34, 1967.

New Jersey's Field Services program, which began in March, 1956, provides a 3-year period of after-care services for post-institutionalized MRs in the community. The program maintains 3 regional district offices and is staffed by caseworkers. Program emphases are: making field visits, reducing stress, using supportive techniques to help clients make work and leisure time adjustments, finding suitable work placement which will be an extension of institutional training and will be in proximity to the district office, providing opportunities for greater freedom and self-direction, using community rather than institutional resources when clients need help, increasing family readiness for the return of their MR member to the community, and "doing with" the client rather than "talking with" him. Initial placement for the majority of clients is in sleep-in work and sheltered boarding homes. Clients need large amounts of support and environmental structuring. During the 3-year period of adjustment evaluation, about 1/3 of the clients return to the institution. Field Service caseworkers cooperate with institutional caseworkers to prepare MRs for community living. They also continue to follow up clients who have finished the initial evaluation period. (No refs.) - *J. K. Wyatt.*

No address

1515 CAMPBELL, ELIZABETH. The handicapped child at home. *Medical and Biological Illustration*, 17(4):268-269, 1967.

By providing counseling and education to the family, a handicapped child (HC) can be

raised and cared for at home - the best environment for him - while receiving the special training he requires. Since the entire family is involved in the care of an HC, many questions and problems arise among the members. In this area volunteer agencies can aid considerably in helping the family members overcome their problems - particularly those of a psychological or interpersonal nature. Furthermore, because of recent advances in medicine, more handicapped children are surviving, which means that more services must be made available. Since state agencies are limited by law in their activities, volunteer agencies should experiment more freely in the development of new and better services for the HC as well as educate the community and prospective employers. (No refs.) - *E. Gaer.*

Invalid Children's Aid
Association
126 Buckingham Palace Road
London, S. W. 1, England

1517 GALLAGHER, URSULA M. The adoption of mentally retarded children. *Children*, 15(1):17-21, 1968.

The adoption of mildly MR children by persons capable of supplying warmth, understanding, a normal home, encouragement, and educational opportunities not only will aid in the full development of these children but also will satisfy the special needs of the adoptive parents. Research findings indicate that parental relationships and environmental experiences can have a profound effect on the development of MR children. Careful selection of adoptive homes and evaluation of the needs of prospective adoptive parents are essential parts of the adoptive process. (7 refs.) - *J. K. Wyatt.*

No address

Protective Services

1516 HELSEL, ELSIE D. Planning ahead for long term care. *Developmental Medicine and Child Neurology*, 9(6):757-765, 1967.

Available forms of long term care for the cerebral palsied in America are described. Despite considerable variety in the types of placement and program available, there are still serious gaps and lack of co-ordination in services. There are often difficulties in calculating the future caseload and in overcoming the prejudice of the handicapped and their families against existing facilities which are quite adequate. Planned research into these problems is needed, but short-term measures, such as making an inventory of resources in a community and a file of potential candidates for long term services, can be taken now. (27 refs.) - *Journal summary.*

2811 Helston Road
Columbus, Ohio

1518 GERMERAAD, PETRA. When parents age. International League of Societies for the Mentally Handicapped. In: *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, p. 44-48.

The problems confronted by the MR when their parents are no longer able to provide security are discussed in terms of the care, services, and facilities being planned in the Netherlands by several parents' organizations as well as the Central Organization for the care of the Mentally Handicapped. Their goal is to provide sheltered boarding houses in the candidate's hometown. The selection of boarding-house residents will be made by a team of specialists and will be based on psychiatric, medical-social, pediatric, educational and relevant personal data. Most rooms in the sheltered housing will be bedsitting rooms for 1 person. Small homes, which will handle from 6 to 8 candidates are planned for MRs with a relatively high social integration, good motor development, and adequate communication. For those candidates requiring more specialized care, larger homes accommodating 15 to 25 will soon be available. (No refs.) - *B. Bradley.*

PARENTS AND FAMILY

1519 International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, 177 p.

These proceedings of the International League, which is composed of 31 national societies, are concerned with an overview of the problems experienced by families of the mentally handicapped. The 16 papers focus on a variety of topics including parental attitudes, social and financial provisions, public acceptance, and the role of parent associations. Contents are concerned with primary problems affecting the family rather than problems affecting the retardate himself. Since several major languages were employed in the conference, summaries of the papers are available in English, German, and French. Most of the papers were descriptive rather than experimental in content. (12 refs.) - *B. Bradley.*

CONTENTS: Introductory Address; Breaking the News; Developmental Stresses on Families of the Mentally Handicapped; When Parents Age; Respect for Life; Attitude of the Retarded Person Towards Himself; Spiritual Welfare; Counselling; Social Provision for the Mentally Handicapped; Financial Help; Public Acceptance of the Mentally Retarded; Successful Family Life for the Retarded Child; Role of Parents Associations; Research and the Future; Highlights; Conclusions.

1520 HUTCHISON, ALEXANDER. Stress on families of the mentally handicapped. In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France March 21-26, 1966.) Brussels, Belgium, 1966, p. 9-19.

The problems and difficulties encountered by families of the mentally handicapped are described in terms of the stress experienced by family; proposals are made for its alleviation. The paper focuses on instances where MR persons remain within the family structure from infancy through adulthood. The implementation of diagnostic procedures involves timing, type of information, type of diagnostician, and distribution of information to the parents. Parents should not be told separately, and all facts and information should be given. This procedure may be done in the home as a family conference. The physician making the diagnosis, the family doctor, and the counsellor should attend this meeting with the parents, and sufficient time should be allotted for questions. The presence of an MR person in the home will cause the mother to experience physical strain, anxieties, social adjustment problems, financial concerns, worries about future pregnancies, and fatigue. Each stage of development of the retardate creates new problems and anxieties especially in regard to vocational planning and social behavior. The father will have similar problems with additional stress concerning financial support and possible neglect of himself and other family members by his over-worked wife. The other family members may experience feelings of jealousy, concerns over hereditary defects, and anxieties about support of the retardate after the deaths of the parents. Some of the strains in the family group can be relieved with an accurate and quick diagnosis of the condition; a coordination of services, early pre-schools, financial aid, parent associations, education of the public, and genetic counseling are also suggested as procedures for aiding the families of the retardate. (No refs.) - *B. Bradley.*

1521 HUTTON, _ (Lady). Breaking the news. In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, p. 20-29.

To obtain a picture of the attitudes parents of MRs have toward the professional services offered to their families, data were analyzed from 142 replies to a questionnaire which had been devised by a parent of a mongoloid child and sent to approximately 500 families. Information requested included: (1) the child and family background, (2) diagnosis and the period immediately following, and (3) family problems. Additional space was made available on the form for comments from the families regarding the effectiveness of professional assistance upon initial contact and in

presentation of the diagnostic information. Four status groups were determined with 60 percent of the unskilled group making no additional comments. Thirty-eight parents felt that the specialists were abrupt and unsympathetic at the time of diagnosis. Delay in diagnosis was presented as a complaint in some cases. Of all the parents of children under age 5, none felt satisfied with how they were told of the child's problem. There was a lack of advice and information given at the time of diagnosis, and differences in diagnoses led to considerable parental anxiety. Parents, especially the mothers, seemed to go into a state of shock upon hearing the diagnosis. The need for constant supervision of the child and the great amount of physical energy expended in caring for him appeared as major problems within the families. Also the lack of services available to the MR was mentioned often. The public attitudes due to fear, lack of information, and unfamiliarity affect the amount of stress experienced by the family members. It is concluded that it is not reasonable for society to ask parents to accept a situation that society itself finds unacceptable. (No refs.) - *B. Bradley.*

1522 BACH, HEINZ. Wandel der Familienbelastung angesichts der Entwicklung des geistig behinderten Kindes. (Developmental stresses on families of the mentally handicapped.) In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, p. 30-43.

The discrepancy between the developmental stages of the MR and his progress creates anxieties and family problems. The development may be characterized by noticeable retardation and limited psychic, mental, and motor development in spite of almost normal physical development. Distinct phases of family problems and stress correspond to the developmental stages of the MR child: (1) the discovery of MR by the parents in the child's first or second year, (2) the realization of MR by society in about the second or third year, (3) the recognition of MR by siblings in the third or fourth year, (4) the awareness by the child of his retardation in about the fourth year, (5) the discovery by the family in about the sixth year that educational programing for the normal child is not available for the retardate, (6) the ascertainment by the child in his seventh year that society lacks concern and understanding of retardation, and (7) the realization by the parents in about the fourteenth year that the child has a limited vocational potential. These phases are concrete stages corresponding with specific tasks, and the problems that are involved and solved are human maturation factors for the families of MR children. (7 refs.) - *B. Bradley.*

1523 ILLINGWORTH, R. S. Counselling. In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, p. 86-95.

The problems in counseling the parents of MR children are discussed in terms of orientation, information, and management of the retardate within the family structure. Adequate guidance is very difficult because (1) no one really knows the problems of a parent of a handicapped child without experiencing them himself and (2) all handicapped children and their environments are different. In theory the parents should be together when informed of the diagnosis, but this is not always possible. A complete diagnosis should be made before any information is given to the parents. Parental reaction to the diagnosis may involve shock, disbelief, resentment, guilt, blame, rejection, and pathological attachment to the child. Assets, limitations, and associated physical disabilities of the child should be determined so that plans for the future can be implemented. Guidance regarding the child's daily management should be provided. The advantages and limitations of institutional care should be pointed out with consideration given to the child's defect, his behavior, the effect on siblings, and the physical and emotional stress on the parents. It is never the child who benefits from placement in an institution but rather the parents and the family. Counseling must be continuous in order to be most beneficial to the family. (No refs.) - *B. Bradley.*

1524 LÜTHY, A. Finanzielle Hilfe. (Financial help.) In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, p. 106-116.

The problems of providing financial assistance to help decrease the stress of supporting the retardate within the family are

described. Adequate help depends upon obtaining precise knowledge of the requirements of each individual family. Recently costs of support for the MR have increased; consequently, requirements for financial assistance have also risen. In view of the large amount of financial support required, the state is the agency most able to provide aid. It can provide assistance according to competencies granted by the constitution and legal bases. Although the states have chosen different ways to provide financial help, the kind of help can be classified in terms of immediacy of the conditions on which it is granted. The Federal Disability Insurance is an example of how financial help for the benefit of the mentally handicapped children can be involved in a social insurance scheme. The principles indicating satisfactory financial aid are described. (No refs.) - *B. Bradley.*

1525 WORTIS, JOSEPH. Successful family life for the retarded child. In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Conference, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, p. 128-137.

Case histories of families with excellent adjustment were studied to determine the characteristics these families possess. The cases were drawn from a clinic population which is considered to be fairly representative of the general population of New York City. The most striking characteristic of the good families is that they were favored by circumstances (education, financial support, and lack of psychiatric problems in their retardates) which allowed them to deal more successfully with their problems. The parents appeared to be especially warm and devoted. Families appear to adjust best to a defective child when the stress and burdens are tolerable and surmountable and less able to adjust when cumulative burdens tax their resources. However, there often is an easier and more casual acceptance of retarded children among simple working people when compared with acceptance than among professional families. Major factors in successful family life seem to be that the child is accepted as he is by both parents; the mother functions in her usual manner, continuing her association with her friends; and both parents meet the needs of their normal children as well as those of the retardate. (5 refs.) - *B. Bradley.*

1526 GRIGNON, M. MAURICE. Rôle des associations de parents. (Roles of parents associations.) In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, p. 138-154.

The complex roles of parent associations are discussed in terms of family action, training, and information. The parent associations are dynamic since they are concerned with daily family problems. The concept of the family's freedom of decision is basic to the program. The role of family action exists on 3 levels: acceptance by the family of their child's deficiency, integration into the community life, and acceptance of the responsibility of serving others. The means for family action include: schools for parents, parent organizations, family delegates and service, tutelary services, and life expectancy funds. The role of training and equipping involves aiding the retardate by providing him with maximal services compatible with his handicap. These include: schools, workshops, preschools, camps, centers, vocational shops, recruitment, and training of personnel. The role of information involves knowledge of MR, use of public media, and harmonious relationships with government agencies. (No refs.) - *B. Bradley.*

1527 DYBWAD, GUNNAR. Highlights. In: International League of Societies for the Mentally Handicapped. *Stress on Families of the Mentally Handicapped.* (Proceedings of the 3rd International Congress, Paris, France, March 21-26, 1966.) Brussels, Belgium, 1966, p. 162-169.

The most significant phenomenon of the proceedings of the Third Congress of the International League of Societies for the Mentally Handicapped appears to be that the attitude of parents has changed from chronic anxiety to a positive approach which demands that society provide services and facilities for their children as a matter of right. The new image of the retardate as a person with certain defined rights within the community must be extended so that society is aware of its obligations. The alleviation of stress for the family of an MR is dependent upon continued professional assistance in solving problems which occur at the various developmental stages. The importance of adolescence

and related problems warrants more attention. Concern should be directed toward the child's assets instead of toward his deficiencies. Adult problems of the MR and rights of employment are being considered in terms of facilities, legal protection, and employment opportunities. Other concerns such as financial support, adjustment, overprotection, research, institutional and community care as well as family attitudes are given extended coverage within these papers. (No refs.) - *B. Bradley.*

1528 NEWCOMBE, HOWARD B. Risks to siblings of stillborn children. *Canadian Medical Association Journal*, 98(4):189-193, 1968.

After the birth of 1 stillborn child, the combined risk of still further stillbirths to the same mother and of child deaths and registrable handicaps among the liveborn brothers and sisters of the stillborn child is more than doubled. Where 2 previous children have been stillborn the risk is increased fivefold, and affects 1 child out of every 3. Among the liveborn siblings the elevated risk of handicaps and deaths arises from a wide spectrum of conditions, including congenital malformations, diseases of the nervous system, infective diseases, and accidents. Although some of these conditions may be etiologically related to the stillbirths, many of the disease associations are probably socioeconomic in origin and due to differences in family living conditions. If so, some degree of prevention would seem to be possible, not only for the stillbirths but for a variety of handicapping conditions, such as the congenital malformations, where poor hygiene may not be an obvious cause. The present study illustrates a use of routine medical records to uncover disease relationships that are in need of further study. (10 refs.) - *Author summary.*

Atomic Energy of Canada Limited
Chalk River Nuclear Laboratories
Chalk River, Ontario
Canada

311-967 O - 68 - 10

SELECTED JOURNALS

The journals listed below are scanned regularly for articles pertinent to mental retardation.

Academic Therapy Quarterly
Acta Genetica et Statistica Medica
Acta Neuropathologica
Acta Ophthalmologica
Acta Paediatrica Belgica
Acta Paediatrica Scandinavica
Acta Paedopsychiatrica
Acta Pathologica et Microbiologica Scandinavica
Amentia
American Child
American Education
American Journal of Diseases of Children
American Journal of Human Genetics
American Journal of Medicine
American Journal of Mental Deficiency
American Journal of Nursing
American Journal of Obstetrics and Gynecology
American Journal of Occupational Therapy
American Journal of Ophthalmology
American Journal of Orthopsychiatry
American Journal of Pathology
American Journal of Psychiatry
American Journal of Sociology
American Journal of the Medical Sciences
American Psychologist
American Sociological Review
Annals of Human Genetics
Annales Medico-Psychologiques
Annales Paediatriae Fenniae
Archiv fur Kinderheilkunde
Archives Francaises de Pediatrie
Archives of Dermatology
Archives of Disease in Childhood
Archives of General Psychiatry
Archives of Neurology
Archives of Ophthalmology
Australian Children Limited
Australian Paediatric Journal
Biologia Neonatorum
Brain
British Journal of Educational Psychology
British Journal of Preventive and Social Medicine
British Journal of Psychiatry
British Journal of Psychology
British Journal of Social and Clinical Psychology
British Medical Journal
Bulletin of the Menninger Clinic

California Education
California Mental Health Research Digest
Canada's Mental Health
Canadian Medical Association Journal
Canadian Nurse
Catholic Charities Review
Cerebral Palsy Journal
Cheshire Smile
Child Development
Child Welfare
Children
Children's House
Clinical Pediatrics
Clinical Proceedings of Children's Hospital of the District of Columbia
Community Mental Health Journal
Comprehensive Psychiatry
Confinia Psychiatrica
Cytogenetics

Developmental Medicine and Child Neurology
Digest of the Mentally Retarded
Diseases of the Nervous System
Dissertation Abstracts
dsh Abstracts

Education and Training of the Mentally Retarded
Educational and Psychological Measurement
Elementary School Journal
Enfance
Epilepsia
Eugenics Quarterly
Eugenics Review
Exceptional Children

Federation Proceedings
Forum
Forward Trends
France Medicale

General Practice
Genetic Psychology Monographs
German Medical Monthly

Harvard Educational Review
Health, Education and Welfare Indicators
Health Laboratory Science
Heilpadagogische Forschung
Heilpadagogische Werkblatter
Helvetica Paediatrica Acta
Hospital and Community Psychiatry

International Child Welfare Review
International Journal of Neuropsychiatry
International Journal of Religious Education
International Nursing Review
International Rehabilitation Review

Japanese Journal of Child Psychiatry
Journal de Psychologie
Journal of Abnormal Psychology
Journal of Applied Behavior Analysis
Journal of Child Psychology and Psychiatry
Journal of Clinical Endocrinology and Metabolism
Journal of Clinical Psychology
Journal of Communication Disorders
Journal of Comparative and Physiological Psychology
Journal of Consulting Psychology
Journal of Counseling Psychology
Journal of Educational Psychology
Journal of Educational Research
Journal of Experimental Child Psychology
Journal of Experimental Medicine
Journal of Experimental Psychology
Journal of General Psychology
Journal of Genetic Psychology
Journal of Learning Disabilities
Journal of Medical Genetics
Journal of Mental Deficiency Research
Journal of Mental Subnormality
Journal of Nervous and Mental Disease
Journal of Neurochemistry
Journal of Neurology, Neurosurgery, and Psychiatry
Journal of Neuropathology and Experimental Neurology
Journal of Neurophysiology
Journal of Neuropsychiatry
Journal of Neurosurgery
Journal of Nutrition
Journal of Pediatrics
Journal of Personality
Journal of Psychiatric Nursing
Journal of Psychology
Journal of Rehabilitation
Journal of Rehabilitation in Asia
Journal of Secondary Education
Journal of Social Psychology
Journal of Special Education
Journal of Speech and Hearing Disorders
Journal of Speech and Hearing Research
Journal of the American Medical Association
Journal of the American Physical Therapy Association
Journal of the Experimental Analysis of Behavior
Journal of the Neurological Sciences
Journal of Verbal Learning and Verbal Behavior

Lancet
Lebenshilfe

Medecine Infantile
Medical Journal of Australia
Medical Science
Medical World News
Mental Health
Mental Retardation (AAMD)
Mental Retardation (Canadian ARC)
Mental Retardation in Illinois
Merrill-Palmer Quarterly
Metabolism
Mind Over Matter
Motive

NEA Journal
Nature
Neurology
New England Journal of Medicine
New York State Education
Nos Enfants Inadaptes
Nursing Mirror
Nursing Outlook
Nursing Research
Nursing Times

Obstetrics and Gynecology
Ohio State Medical Journal
Our Children

Panminerva Medica
Parents' Voice
Parks and Recreation
Pediatrics
Perceptual and Motor Skills
Pointer
Postgraduate Medical Journal
Proceedings of the Royal Society of Medicine
Proceedings of the Society for Experimental Biology and Medicine
Psychiatria et Neurologia Japonica
Psychiatria, Neurologia, Neurochirurgia

Psychiatric Quarterly
Psychological Bulletin
Psychological Monographs
Psychological Record
Psychological Reports
Psychological Review
Psychology
Psychology Today
Psychotherapy and Psychosomatics

Recreation in Treatment Centers
Rehabilitation in Australia
Rehabilitation Literature
Rehabilitation Record
Remedial Education
Review of Educational Research
Revista Brasileira de Deficiencia Mental
Revue d'Hygiene et de Medecine Sociale
Revue Neurologique

Schweizerische Medizinische Wochenschrift
Science
Science News
Scientific American
Slow Learning Child
Social Casework
Social Problems
Social Science and Medicine
Social Security Bulletin
Social Work
Southern Medical Journal
Special Education
Special Education in Canada
Special Education Review

Teaching and Training
Texas Medicine
Texas Reports on Biology and Medicine
Tijdschrift voor Zwakzinnigheid en Zwakinnigenzorg
Training School Bulletin

Welfare Reporter
Winnower

Zeitschrift fur Heilpadagogik
Zhurnal Nevropatologii i Psikhiatrii

AUTHOR INDEX

The author index has been compiled on the basis of abstract numbers rather than pagination.

SUBJECT INDEX

The subject index has been compiled on the basis of abstract numbers rather than pagination.

Abbreviations: b.i. - brain injury or brain injured; c/w - compared with; c.p. - cerebral palsy; EMR - educable mentally retarded; ep. - epilepsy; inst. - institutional, institutionalized; MR - mentally retarded; SMR - severely mentally retarded; TMR - trainable mentally retarded; w/ - with.

U. S. GOVERNMENT PRINTING OFFICE : 1968 O - 311-967

MENTAL RETARDATION ABSTRACTS

Questions about the Clearinghouse service (except submission of information on current projects) should be addressed to:

Mental Retardation Abstracts
National Clearinghouse for Mental Health Information
National Institute of Mental Health
5454 Wisconsin Avenue
Chevy Chase, Maryland 20203

Requests to be placed on the mailing list for Mental Retardation Abstracts should be addressed to:

Publications Roster
Information Services Branch
National Institute of Mental Health
5454 Wisconsin Avenue
Chevy Chase, Maryland 20203

Requests for single copies and back issues should be addressed to:

Publications Distribution
Information Services Branch
National Institute of Mental Health
5454 Wisconsin Avenue
Chevy Chase, Maryland 20203

CHANGE OF ADDRESS OR REMOVAL OF NAME

Please affix Abstracts mailing label here and mail to Publications Roster, Information Services Branch, National Institute of Mental Health, 5454 Wisconsin Avenue, Chevy Chase, Maryland 20203. Thank you.

(Fill in below only for change of address.
Please print clearly.)

NAME: Initial Initial Last

Organization (Leave blank if none)

Number and Street Address

City State

Country (if other than U.S.) Zip Code (if U.S.)

I wish to discontinue receiving this publication.
Please remove my name from your mailing list. ☐

DE
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION
NATIONAL INSTITUTE OF MENTAL HEALTH
5454 WISCONSIN AVENUE
CHEVY CHASE, MARYLAND 20203

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE · HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION
National Institute of Mental Health